Appendix H

Human Health Risk Assessment

Appendix H – Final
Human Health Risk Assessment

700 South 1600 East PCE Plume Site
Salt Lake City, Utah

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Table of Contents

Section 1 Introduction 1-1

1.1 Site Setting and History 1-1
1.2 Basis for Human Health Concern 1-2
1.3 Summary of Accelerated Operable Unit 1 Human Health Risk Assessment 1-2
1.4 Document Purpose and Organization 1-3

Section 2 Exposure Assessment 2-1

2.1 Conceptual Site Exposure Model 2-1
2.1.1 Primary Source of Contamination 2-1
2.1.2 Transport in the Environment 2-1
2.1.3 Populations of Potential Concern 2-2
2.1.4 Exposure Pathways of Interest 2-3
2.1.4.1 Exposures to Groundwater 2-4
2.1.4.2 Exposures to Seep/Spring Surface Water and Sediment 2-5
2.1.4.3 Exposures to Shallow Soil 2-6
2.1.4.4 Exposures to Homegrown Produce 2-7
2.2 Data Summary 2-8
2.2.1 Groundwater 2-9
2.2.2 Surface Water 2-10
2.2.3 Soil Gas 2-11
2.2.3.1 East Side Springs Sampling 2-11
2.2.3.2 Source Area Sampling 2-12
2.2.4 Air 2-12
2.2.5 Soil/Sediment 2-15
2.2.5.1 Sediment 2-15
2.2.5.2 Soil 2-15
2.2.6 Data Usability Evaluation 2-15
2.3 Chemicals of Interest 2-16
2.3.1 COPC Selection Process 2-17
2.3.2 Source of Screening Levels 2-18
2.3.3 COPC Selection Outcome 2-18
2.3.3.1 Exclusion of Metals from Risk Characterization 2-19
2.3.3.2 Refinement of Surface Water COPC Selection 2-19
2.3.3.3 Refinement of Shallow Groundwater COPC Selection for Digging Exposure Scenarios 2-20
2.3.4 Evaluation of Laboratory Detection Limits 2-21
2.4 Evaluation of Chemical Exposures 2-22
2.4.1 Basic Equations 2-22
2.4.1.1 Ingestion Exposures 2-22
2.4.1.2 Dermal Exposures 2-24
2.4.1.3 Inhalation Exposures 2-25
2.4.2 Exposure Parameters 2-26
2.4.3 Exposure Areas 2-27

2.4.4 Exposure Point Concentrations 2-27
2.4.4.1 For Properties with Measured Indoor Air Data 2-28
2.4.4.2 For Properties without Measured Indoor Air Data 2-28
2.4.4.3 Construction Worker Exposures 2-28
2.4.4.4 Hypothetical Future Use of Groundwater as Drinking Water 2-29

Section 3 Toxicity Assessment 3-1
3.1 Non-Cancer Effects 3-1
3.2 Cancer Effects 3-2
3.3 Toxicity Values for Ingestion and Inhalation Exposures 3-3
3.4 Toxicity Values for Dermal Exposures 3-4
3.5 Evaluation of Carcinogens with Mutagenic Modes of Action 3-4

Section 4 Risk Characterization 4-1
4.1 Basic Risk Calculation Approach 4-1
4.1.1 Non-Cancer Effects 4-1
4.1.1.1 Hazards from Ingestion and Dermal Exposures 4-1
4.1.1.2 Hazards from Inhalation Exposures 4-1
4.1.2 Cancer Effects 4-2
4.1.2.1 Risks from Ingestion and Dermal Exposures 4-2
4.1.2.2 Risks from Inhalation Exposures 4-2
4.2 Weight of Evidence Approach 4-3
4.3 Site and Source Characteristics 4-4
4.3.1 Site Geology and Hydrology 4-4
4.3.2 Contaminated Groundwater Plume 4-4
4.3.3 Area of Vapor Intrusion Concern 4-6
4.3.4 Temporal Patterns 4-7
4.4 Risk Results 4-8
4.4.1 Construction Worker Exposures 4-8
4.4.1.1 Based on Shallow Groundwater 4-8
4.4.1.2 Based on Soil Gas Measurements 4-9
4.4.2 Hypothetical Future Exposures to Potable Groundwater 4-9
4.4.3 Properties with Measured Air Data 4-10
4.4.3.1 Residential Exposures 4-11
4.4.3.2 School Exposures 4-26
4.4.3.3 Daycare Exposures 4-28
4.4.3.4 Indoor Worker Exposures 4-28
4.4.3.5 Outdoor Ambient Air Exposures 4-31
4.4.4 Properties without Measured Air Data 4-31
4.4.4.1 Plume Extents 4-32
4.4.4.2 Correlations Between Media 4-34
4.4.4.3 Correlations Between Analytes 4-35

Section 5 Uncertainty Assessment 5-1
5.1 Data Limitations 5-1
5.1.1 Data Adequacy 5-1
5.1.1.1 Indoor Air 5-1
5.1.1.2 Shallow Soil 5-4

5.1.1.3 Surface Water and Sediment 5-4
5.1.2 Accuracy of Analytical Measurements 5-4
5.1.3 Detection Limit Adequacy 5-4
5.2 Exposure Assessment 5-6
5.2.1 Uncertainties from Exposure Pathways Not Evaluated 5-6
5.2.2 Uncertainties from Chemicals Not Evaluated Quantitatively 5-7
5.2.3 Uncertainties in Exposure Point Concentrations 5-7
5.2.4 Uncertainties in Human Exposure Parameters 5-7
5.2.5 Uncertainties in Chemical Absorption (RBA) 5-8
5.3 Toxicity Assessment 5-8
5.3.1 Uncertainties from Chemicals without Toxicity Values 5-8
5.3.2 Uncertainties in Toxicity Factors 5-9
5.4 Risk Characterization 5-9
5.4.1 Uncertainties from Background Contributions 5-9
5.4.2 Uncertainties in Cumulative Risk 5-10

Section 6 Risk Conclusions 6-1

Section 7 References 7-1

List of Attachments

Attachment H.1	Medium-Specific Screening Levels
Attachment H.2	Evaluation of Metal COPCs
Attachment H.3-1	Virginia Unified Risk Assessment Model Output for Construction Worker Exposures to Shallow Groundwater
Attachment H.3-2	Virginia Unified Risk Assessment Model Output – Based on Well MW-14S
Attachment H.4	Virginia Unified Risk Assessment Model Output for Construction Worker Exposures to Soil Gas
Attachment H.5	Detailed Human Health Risk Calculations for Groundwater
Attachment H.6	Detailed Human Health Risk Calculations for Indoor Air
Attachment H.7	Detailed Human Health Risk Calculations for Indoor Air, By Method
Attachment H.8	Detailed Human Health Risk Calculations for Outdoor Air
Attachment H.9	Risk Summary Tables Based on CTE Exposure Parameters
Attachment H.10	Correlations Between Media and Analytes

List of Figures

Figure H.2-1	Conceptual Site Exposure Model for Human Health
Figure H.4-1	OU1 Indoor Air Sampling Spatial Coverage
Figure H.4-2	PCE Groundwater Plume Extents
Figure H.4-3	TCE Groundwater Plume Extents
Figure H.4-4	Relationship in PCE Concentrations Between Different Media
Figure H.4-5	Relationship Between PCE and TCE Concentrations in Different Media

List of Tables

Table H.2-1 Groundwater COPC Selection for Protection of Human Health

Table H.2-2 Surface Water COPC Selection for Protection of Human Health

Table H.2-3 Soil Gas COPC Selection for Protection of Human Health

Table H.2-4 Indoor Air COPC Selection for Protection of Human Health

Table H.2-5 Outdoor Air COPC Selection for Protection of Human Health

Table H.2-6 Soil/Sediment COPC Selection for Protection of Human Health

Table H.2-7 Screening Level Summary for Human Health Receptors

Table H.2-8 Human Health Receptor COPCs Selected for Quantitative Assessment

Table H.2-9 Refined Surface Water COPC Evaluation for Contact with Seep/Spring Surface Water

Table H.2-10 Refined Shallow Groundwater COPC Evaluation for Residential and Outdoor Worker Contact During Digging

Table H.2-11 Dermal Absorption Fraction and Permeability Coefficients

Table H.2-12 Residential Exposure Parameters

Table H.2-13 Student Exposure Parameters

Table H.2-14 Daycare Children Exposure Parameters

Table H.2-15 Indoor Worker Exposure Parameters

Table H.2-16 Outdoor Worker Exposure Parameters

Table H.2-17 Default RME Construction Worker Exposure Parameters in the Virginia Unified Risk Assessment Model (VURAM)

Table H.3-1 Oral and Dermal Toxicity Values

Table H.3-2 Inhalation Toxicity Values

Table H.4-1 Number of Indoor and Outdoor Air Samples Collected by Property

Table H.4-2 Screening-Level Evaluation for Construction Worker Exposures to Shallow Groundwater

Table H.4-3 Location-Specific Evaluation for Construction Worker Exposures to PCE and TCE in Shallow Groundwater

Table H.4-4 Screening-Level Evaluation for Construction Worker Exposures to Trench Air Impacted by Soil Gas

Table H.4-5 RME Risk Summary for Hypothetical Future Residential Exposures to Groundwater Based on Maximum Concentrations

Table H.4-6 Risk Summary for Residential Exposures to Indoor Air, Based on Measured Indoor Air Data (Maximum Concentrations)

Table H.4-7 Risk Summary for Student Exposures to Indoor Air Inside Schools, Based on Measured Indoor Air Data (Maximum Concentrations)

Table H.4-8 Risk Summary for Daycare Children Exposures to Indoor Air, Based on Measured Indoor Air Data (Maximum Concentrations)

Table H.4-9 Risk Summary for Indoor (Commercial) Worker Exposures to Indoor Air, Based on Measured Indoor Air Data (Maximum Concentrations)

Table H.4-10 Risk Summary for Worker Exposures to Indoor Air Inside VAMC Buildings, Based on Measured Indoor Air Data (Maximum Concentrations)

Table H.4-11 Risk-based Screening Levels for Groundwater, Soil Gas, and Indoor Air

Table H.4-12 Risk Summary for Residential Exposures to Outdoor Air, Based on Measured Outdoor Air Data (Maximum Concentrations)

Table H.4-13 Risk Summary for Daycare Children Exposures to Outdoor Air, Based on Measured Outdoor Air Data (Maximum Concentrations)

Table H.4-14 Risk Summary for Outdoor Worker Exposures to Outdoor Air, Based on Measured Outdoor Air Data (Maximum Concentrations)

Table H.4-15 Risk Summary for Outdoor Air Exposures at VAMC Buildings and Schools, Based on Measured Outdoor Air Data (Maximum Concentrations)

Table H.5-1 Risk Summary for Residential Exposures to Indoor Air Stratified by Sampling/Analysis Method, Based on Measured Indoor Air Data (Maximum Concentrations)

Table H.5-2 Common Household Sources of Background VOCs

Table H.5-3 Indoor Air Background Levels of VOCs Compared to Site Concentrations

Table H.6-1 Overall Human Health Risk Assessment Conclusions for Site-related COPCs

Acronyms and Abbreviations

≤	less than or equal to
%	percent
µg	microgram
µg/m^3	micrograms per cubic meter
µg/L	micrograms per liter
95UCL	95% upper confidence limit
ABS_{GI}	oral absorption fraction
ADAF	age-dependent adjustment factor
AOU	accelerated operable unit
AT	averaging time
ATSDR	Agency for Toxic Substances and Disease Registry
B	ratio of the permeability coefficient through the stratum corneum to the permeability coefficient across the viable epidermis
bgs	below ground surface
BW	body weight
C	concentration of chemical
CDM Smith	CDM Federal Programs Corporation
cis-1,2-DCE	cis-1,2-dichloroethene
CLP	Contract Laboratory Program
cm	centimeter
cm^2	centimeters squared
cm/hr	centimeters per hour
COPC	chemical of potential concern
CSEM	conceptual site exposure model
CTE	central tendency exposure
DA_{event}	dose absorbed per event
DAD	dermally absorbed dose
DI	daily intake
DI_L	daily intake averaged over a lifetime
DO	dissolved oxygen
DPT	direct-push technology
DSR	data summary report
EC	exposure concentration
ED	exposure duration
EF	exposure frequency
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentration
ESS	East Side Springs
ET	exposure time
EV	event frequency
FA	fraction absorbed
GW	groundwater
HAPSITE	Inficon HAPSITE

HHRA	human health risk assessment
HI	hazard index
HIF	human intake factor
HQ	hazard quotient
HRS	Hazard Ranking System
IR	intake rate
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
K_p	dermal permeability coefficient
kg	kilogram
L	liter
LOAEL	lowest-observed-adverse-effect level
m^3	cubic meter
MCL	maximum contaminant level
MDL	method detection limit
mg	milligram
mg/cm^2-event	milligram per square centimeter per event
mg/d	milligrams per day
mg/kg	milligrams per kilogram
mg/kg-day	milligrams per kilogram body weight per day
MW	monitoring well
NCEA	National Center for Environmental Assessment
NHL	non-Hodgkin's lymphoma
NOAEL	no-observed-adverse-effect level
ORP	oxidation reduction potential
OU	operable unit
PCE	tetrachloroethene
PPRTV	Provisional Peer-Reviewed Toxicity Value
PQL	practical quantitation limit
QC	quality control
RAGS	Risk Assessment Guidance for Superfund
RAL	removal action level
RBA	relative bioavailability
RBSL	risk-based screening level
RfD	reference dose
RfC	reference concentration
RI	remedial investigation
ROD	record of decision
RL	reporting limit
RME	reasonable maximum exposure
RSL	Regional Screening Level
SA	surface area
SF	slope factor
site	700 South 1600 East PCE Plume Superfund Site
SLC	Salt Lake City
SLCDPU	Salt Lake City Department of Public Utilities

SVOC	semi-volatile organic compound
SVP	soil vapor probe
SW	surface water
TCE	trichloroethene
TDS	total dissolved solids
t*	time to reach steady state
t_{event}	event duration
τ_{event}	lag time per event
TOC	total organic carbon
TWA	time-weighted average
TWF	time-weighting factor
UCL	upper confidence limit
UDEQ	Utah Department of Environmental Quality
UF	uncertainty factor
VA	U.S. Department of Veterans Affairs
VAMC	Veterans Affairs Medical Center
VC	vinyl chloride
VDEQ	Virginia Department of Environmental Quality
VI	vapor intrusion
VIMS	vapor intrusion mitigation system
VISL	vapor intrusion screening level
VOCs	volatile organic compounds
VP	Vapor Pin
VURAM	Virginia Unified Risk Assessment Model
WOE	weight of evidence

Section 1
Introduction

This baseline human health risk assessment (HHRA) is for the 700 South 1600 East Tetrachloroethene (PCE) Plume Superfund Site located near the George E. Wahlen Veterans Affairs Medical Center (VAMC) in Salt Lake City, Utah. CDM Federal Programs Corporation (CDM Smith) developed this HHRA as directed by the U.S. Army Corps of Engineers, Kansas City District under Contract No. W912DQ-18-D-3008, Task Order No. W912DQ19F3048.

The VAMC operated a part-time dry-cleaning operation in Building 7 that used PCE over a 6-year period in the late 1970s and early 1980s. During this period, dry-cleaning residuals were disposed of into the sanitary sewer. PCE-contaminated groundwater is present beneath the VAMC property and in areas hydraulically downgradient, extending to the East Side Springs (ESS) area[1] in Salt Lake City.

This HHRA is an appendix to the Remedial Investigation (RI) for Operable Unit 1 (OU1) of the site. As such, information presented in the RI will not be repeated, but the HHRA will summarize relevant information and cross-reference to the appropriate sections, tables, and figures within the RI for further details. The results of the HHRA are intended to help inform risk managers and the public about current and potential future human health risks at the site. The HHRA will also help determine if there is a need for remedial actions to protect public health at the site.

1.1 Site Setting and History

The site[2] is in Salt Lake City, near the University of Utah and the front (west side) of the Wasatch Mountains (RI Figure 1-1). The site is in a mixed commercial and residential area, and the major streets that bound it include 500 South to the north, Michigan Avenue to the south, 1100 East to the west, and Foothill Drive to the east (RI Figure 1-2).

The VAMC was constructed in the late 1940s on property that was formerly part of the Fort Douglas (U.S. Army) military post. A dry-cleaning facility on the VAMC campus was operational in Building 7 from approximately 1976 through 1984. A single "closed loop" dry-cleaning system was operated, meaning the system contained a distillation process for the recovery of PCE at the end of each cycle. The condensate from the distillation process was emptied into a vitrified clay drain line attached to the sanitary sewer. This method of disposal was common practice in the 1980s (EPA 2012).

Section 2.3 of the RI provides a detailed description of past sampling investigations. In brief, PCE was first detected in 1990 during sampling of the Mount Olivet Cemetery irrigation well (Utah

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[1] The ESS area is the project-specific name for the area east of the Wasatch Fault where surface seeps and springs are present. The area understood to be the ESS spans a substantially larger geographical area than the groundwater plume. Unless specified otherwise, when the term ESS area is used herein, it is intended to mean the smaller extent within the ESS area where groundwater contamination is present.

[2] At this time, the site boundary has not been determined. The boundary presented in RI Figure 1-1 represents the study area of interest for the RI. The term "site" refers to this study area. The extent of the PCE groundwater plume is smaller than the study area.

Department of Environmental Quality [UDEQ] 2000). A follow-up site inspection, conducted by UDEQ's Division of Environmental Response and Remediation, found PCE at Salt Lake City Department of Public Utilities (SLCDPU) Drinking Water Well No. 18 (SLC-18). Several springs and seeps emanate along the East Bench Fault within the ESS residential neighborhood west of 1300 East Street. PCE was detected in several of the springs and seeps downgradient of the identified PCE plume.

As a result of these PCE detections, the site was placed in the Comprehensive Environmental Response, Compensation, and Liabilities Act Information System in January 2011 (EPA 2012). A preliminary assessment/site inspection was conducted by UDEQ's Division of Environmental Response and Remediation in 2011, which determined that PCE and its breakdown products are present in spring water and shallow groundwater, thus posing a potential human health threat (UDEQ 2011). The Mount Olivet Cemetery, several schools, University of Utah athletics facilities, and residential neighborhoods are within the site.

In September 2012, EPA completed a Hazard Ranking System (HRS) evaluation of the site that resulted in a score of 50. HRS documentation identified the sewer line originating from the VAMC campus as the source of the groundwater contamination and determined there was insufficient evidence to identify additional potential sources (EPA 2012). The site was listed on the National Priorities List on May 24, 2013, with the VAMC named as a potentially responsible party (EPA 2014).

1.2 Basis for Human Health Concern

Historical disposal of PCE from a dry-cleaning facility in Building 7 on the VAMC campus has resulted in contamination of groundwater beneath the VAMC campus and in downgradient areas. PCE and its degradation products have been identified in groundwater at the site. Contaminated groundwater is present in shallow groundwater and in seeps and springs that daylight[3] in the ESS residential neighborhood. Humans may come into contact with contaminated site media, including groundwater (non-potable under current conditions and possibly potable in the future), shallow soil, and seep/spring surface water and sediment. PCE and its degradation products are volatile chemicals. Volatile chemicals in groundwater can volatilize into the interstitial spaces in the soil and can migrate upward and be released at the soil surface. If overlying buildings are present, chemical vapors can contaminate indoor air (the infiltration of vapors into indoor air is referred to as vapor intrusion [VI]). Exposures to volatile chemicals have the potential to cause a range of non-cancer and cancer effects in humans. Residents, students, daycare children, and workers (indoor, outdoor, and construction workers) within the contaminated groundwater area could be at risk of adverse health effects if excessive exposure to contaminated environmental media were to occur.

1.3 Summary of Accelerated Operable Unit 1 Human Health Risk Assessment

Historically, the site was divided into two OUs to investigate potential impacts to the environment and downgradient receptors. Accelerated Operable Unit 1 (AOU1) was primarily focused on the

[3] In this context, "daylight" refers to the action of shallow groundwater discharging at ground surface.

immediate public health concerns related to VI in the ESS area, a residential area generally bounded by 500 South and Michigan Avenue (north to south) and between 1300 East and 900 East (east to west) (RI Figure 1-2). Following the AOU1 RI, OU2 was designated for investigation and delineation of the groundwater PCE plume and source area. In 2019, the VA determined, with regulatory approval, that AOU1 and OU2 would be combined into a single OU, OU1.

The AOU1 RI (EA 2019) provided an accelerated evaluation of VI arising from shallow groundwater contamination in the ESS area. The AOU1 RI activities were completed from 2014 through 2017. This investigation included indoor air sampling, soil gas sampling, surface water sampling of ESS seeps and springs and in Red Butte Creek, installation of monitoring wells within ESS, and groundwater sampling.

A preliminary list of site-related chemicals of potential concern (COPCs) was developed during completion of the AOU1 RI. This list included PCE and its degradation products: trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride (VC). The chemical 1,4-dioxane was also included as a preliminary COPC as requested by EPA in a letter dated June 4, 2014, for the purpose of characterizing the nature and extent of contamination during the RI. Other analytes were not included in the AOU1 HHRA because they were deemed as not site attributable.

An HHRA was completed as part of the AOU1 RI. The scope of the AOU1 HHRA was primarily to assess the VI pathway for residents in the ESS neighborhood to determine the need for interim actions to mitigate exposures from VI. An evaluation of potential exposures to surface water, soil, and homegrown produce was also included in the AOU1 HHRA. The AOU1 HHRA concluded that potential exposures from these media were considered insignificant and no quantitative risk estimates were derived.

The AOU1 HHRA relied primarily on indoor air and soil gas data collected between 2015 and 2017 as part of the AOU1 RI. A total of 54 properties were sampled during the AOU1 RI. During these investigations, one property (0040-H) was identified as having indoor air concentrations of PCE at concentrations greater than the established action level and required interim actions (VA 2016). Data for 36 properties[4] evaluated during the AOU1 RI were assessed quantitatively in the AOU1 HHRA. For all properties, available indoor air data indicated the cancer risk estimates were within the acceptable risk range and non-cancer hazards were below the acceptable threshold based on a current residential scenario and current and future commercial/school worker scenario. However, groundwater and soil gas data collected as part of the AOU1 RI showed the potential for VI exposures under a future residential scenario.[5]

1.4 Document Purpose and Organization

While the AOU1 HHRA provided an initial risk characterization of potential exposures at the site, this accelerated risk assessment was intentionally limited in that it was focused on a specific subarea of the site (i.e., the ESS neighborhood), those exposure pathways that were likely to be key risk drivers and those chemicals that were site attributable to identify where prompt action

[4] Some of the data collected in 2015 were not able to be used quantitatively in the AOU1 HHRA, which is why risk estimates were calculated for 36 of the 54 properties sampled. Section 2.2.6 discusses data usability.
[5] This future residential scenario was intended to address both new homes and existing homes without measured indoor air results.

was necessary prior to completion of the final record of decision (ROD). Since the completion of the AOU1 HHRA, additional data have been collected that further inform the exposure assessment and support decisions on the need for remedial action.

This baseline HHRA builds upon what was done as part of the AOU1 HHRA and provides a comprehensive risk characterization in support of the OU1 RI to evaluate potential human health risks from exposures due to contaminated groundwater. This HHRA evaluates the full list of COPCs, assesses exposure scenarios not included in the AOU1 HHRA, and re-evaluates exposure scenarios where more recent data have been collected.

The purpose of this document is to explain how the human health risk calculations were performed, present the risk calculations, and provide an interpretation of the risk conclusions. In addition to this introduction, this report is organized into the following sections:

- **Section 2, Exposure Assessment**, presents the conceptual site exposure model (CSEM), identifies the human populations of potential concern, and discusses the exposure pathways and exposure areas of interest. This section summarizes the available data used in the HHRA, describes how COPCs were selected for further evaluation, and presents the equations used to quantify exposures. This section also presents the exposure parameters used to estimate doses for each population of potential concern.
- **Section 3, Toxicity Assessment**, provides information on how non-cancer and cancer effects were evaluated in the HHRA and presents the toxicity values that were used to quantify potential human health risks for ingestion, inhalation, and dermal exposure routes. This section also describes how mutagenic carcinogens are evaluated differently from other carcinogens.
- **Section 4, Risk Characterization**, provides a summary of the equations that were used to compute non-cancer hazards and cancer risks for COPCs in the HHRA and describes how these risk estimates are interpreted. This section explains how a weight of evidence approach was used to evaluate potential VI exposures. This section also presents the risk results and supporting lines of evidence that help to inform overall risk conclusions.
- **Section 5, Uncertainty Assessment**, provides a discussion of the uncertainties in the risk assessment and describes the impact of these uncertainties on the risk interpretation.
- **Section 6, Risk Conclusions**, reiterates the risk characterization approach and summarizes the overall risk conclusions for the site.
- **Section 7, References**, provides citations for guidance documents, studies, and reports referenced in this HHRA.

All HHRA-specific tables, figures, and attachments referenced within the following sections are provided at the end of the document. The HHRA-specific tables, figures, and attachments are denoted by an "H" prefix (e.g., **Figure H.2-1**).

Section 2
Exposure Assessment

Exposure is the process by which humans come into contact with chemicals in the environment. In general, humans can be exposed to chemicals in a variety of environmental media (e.g., soil, sediment, water, air, or food), and these exposures can occur through three routes (ingestion, dermal contact, or inhalation).

This section summarizes the CSEM for the site, identifies the human populations of potential concern, and discusses the exposure pathways and exposure areas of interest. This section presents the equations that were used in the HHRA to quantify exposures.

2.1 Conceptual Site Exposure Model

Figure H.2-1 presents the CSEM for human exposures at the site. The CSEM summarizes the current understanding of how chemical contaminants released into the environment might result in exposure of human receptors. The main features of this CSEM and the rationalization supporting decisions about the receptors and pathways that were evaluated in the HHRA are discussed in the following subsections.

2.1.1 Primary Source of Contamination

The site is affected by PCE, which was historically disposed into the sanitary sewer in the 1980s by a dry-cleaning facility in Building 7 on the VAMC campus. PCE was likely released from the sewer line into the surrounding soil via cracks in the line. It is also possible that there were spills on the ground surface in the vicinity of the building. These releases resulted in contaminated groundwater, which migrated over time from beneath the VAMC campus along with the alluvial flow into downgradient areas, including the ESS neighborhood. PCE and its degradation products, including TCE, cis-1,2-DCE, and VC, are the primary contaminants of interest at the site.

2.1.2 Transport in the Environment

As illustrated in the CSEM (**Figure H.2-1**), site contaminants can migrate in the environment by several processes:

- Contaminants in groundwater can flow and migrate to downgradient and cross-gradient locations (depending upon the hydraulic gradients of the aquifer).
- Deep groundwater can be extracted for both potable (i.e., drinking water) and non-potable uses (e.g., irrigation).
- Volatile chemicals in shallow groundwater can volatilize into the interstitial spaces between the soil particles, thus resulting in soil gas.
- Soil gas can volatilize at the ground surface and be released to outdoor air or can migrate into buildings through foundation cracks or preferential pathways (e.g., buried utility lines) and affect indoor air.

- Shallow groundwater can daylight in the form of seeps and springs.
- Chemicals in shallow groundwater can adsorb to shallow soil and sediment particles in seeps/springs.
- Homegrown produce can potentially take up chemicals into plant tissues if they are grown in contaminated soil or watered with contaminated groundwater.
- Fine-grained soil/sediment particulates can be released into air by either wind transport and/or human disturbances (e.g., digging).

The potential for VI of volatile contaminants into homes and businesses is of concern at this site. The RI illustrates the plume extent of PCE in shallow groundwater at the site (RI Figure 6-10). However, the potential for VI depends not only on the extent of the groundwater plume, but also on the depth to groundwater. When contaminated groundwater is deep (e.g., 100 feet below ground surface [bgs] or greater), the potential for VI impacts is less, because of attenuation as the vapors pass through the overlying soil. However, when contaminated groundwater is shallow (e.g., within 10 feet bgs), the potential for VI impacts is greater. The potential for VI impacts can also depend upon building characteristics, subsurface soil conditions, seasonal variability, and local weather. For example, VI can often be worse in buildings with open crawl spaces, especially in the winter when windows are closed, and heating systems are on.

2.1.3 Populations of Potential Concern

As described in Section 1.1, the site is in Salt Lake City, in a mixed commercial and residential area, and the major streets that bound it include 500 South to the north, Michigan Avenue to the south, 1100 East to the west, and Foothill Drive to the east (RI Figure 1-2). The Mount Olivet Cemetery, several schools, churches, retail/commercial properties, and residential neighborhoods (mainly single-family homes) are within the site study area. Salt Lake City's Master Plan (Salt Lake City Council 2005, 2017) shows that future land uses are expected to be consistent with current uses.

The following are the main receptor populations of interest that were evaluated in the HHRA:

- **Residents** – Within the residential areas, the main receptor populations of interest are residents (children and adults[6]). Residential populations would also include individuals residing in senior care facilities and long-term rehabilitation facilities (e.g., Valor House in VAMC Building 20). Short-term housing facilities (e.g., Fisher House in VAMC Building 32) were also assessed as a residential population as a conservative approach.
- **Students** – A number of schools are within the site; students at these schools (both primary students aged 6 to <11 years old, and secondary students aged 11 to 18 years old) are assessed separately from the workers and teachers at the school.

[6] Consistent with standard human health risk assessment guidance, children are defined as age 0 to 6 years and adults are defined as ages greater than 6 years (EPA 1989). For some receptors, older children (ages 6 to 16 years) are assessed separately.

- **Daycare Children** – There are daycare facilities inside one school, in VAMC Building 13, and on the University of Utah campus.[7] Daycares may also be operating out of residential properties and churches within the site. Children can be more susceptible than adults to contamination and, thus, are assessed separately.
- **Indoor workers** – This worker population includes adult retail/commercial office workers as well as workers and teachers at schools within the site.
- **Outdoor workers** – This worker population includes adult workers engaging in outdoor activities, such as cemetery groundskeepers and lawn maintenance workers.
- **Construction workers** – It is possible that future construction and utility maintenance activities may occur within the site. Because these types of adult workers could have a higher exposure to deeper soils and shallow groundwater (e.g., during digging or excavation), they are evaluated separately from the standard outdoor worker population.

2.1.4 Exposure Pathways of Interest

Not all exposure pathways for these human populations are likely to be of equal concern. First, to be of concern, an exposure pathway must be "complete." That is, there must be contact between a human receptor and a contaminated environmental medium. A complete exposure pathway consists of the following four elements:

- Source and mechanism of release of chemicals to the environment
- Transport mechanism for movement of chemicals to a point of human and/or ecological contact (exposure point receptor)
- Exposure point (the point of potential contact between the receptor and medium)
- Exposure route (inhalation, ingestion, and dermal contact)

If one or more of these elements is missing, the pathway is incomplete, and no exposure will occur. Incomplete pathways are not evaluated quantitatively in the risk assessment. Incomplete exposure pathways (i.e., those which are not thought to occur) are shown as boxes containing an "X" in **Figure H.2-1**. For pathways that are complete, the relative importance of one to another is related to the amount of chemical taken into the body by each pathway. Complete pathways that are unlikely to contribute significantly to overall exposure also may not be evaluated quantitatively. Complete exposure scenarios likely to be minor contributors to total exposure and risk are shown as boxes containing an open circle in **Figure H.2-1**. Complete exposure scenarios that may be significant are shown in **Figure H.2-1** by boxes containing a solid circle. In this risk evaluation, attention is focused on exposures from these pathways to determine if resulting risk is unacceptable.

The following sections present a more detailed description of the exposure pathways and an analysis of their relative importance for human exposure.

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[7] While the daycares within Building 13 and on the university campus are within the site study area boundary, inspection of RI Figure 6-29A shows they are outside the extent of the PCE plume.

2.1.4.1 Exposures to Groundwater

Residential homes, schools, and businesses at the site are serviced by municipal drinking water sources. Because of the detection of PCE in SLCDPU drinking water well number 18 (SLC-18) in 2004, this well was shut down. There are no known private groundwater wells used for potable purposes within the site. Thus, there is no potable use of groundwater within the site under current conditions. Use of deep groundwater for irrigation is only expected in limited areas, including University of Utah and the Mount Olivet Cemetery, but is not used for residential property irrigation.

Given the shallow depth to groundwater (i.e., groundwater can be present at the ground surface or only a few feet bgs in some areas), it is possible that residents and workers could encounter shallow groundwater during digging activities. Contact with shallow groundwater could occur during gardening, sprinkler line or utility repair, or construction excavation activities, as these activities could extend 2 to 10 feet bgs.

Ingestion of Groundwater as Drinking Water

Although there is no current potable use of groundwater within the site, the HHRA will quantitatively evaluate a potential future potable use scenario to inform risk management decisions for the site.

It is possible that outdoor workers may incidentally ingest irrigation water during maintenance activities. Additionally, as noted above, residents and workers could encounter shallow groundwater during digging activities. Exposure from incidental ingestion of shallow groundwater is likely to be minor but will be evaluated quantitatively in the HHRA.

Dermal Contact with Groundwater

If groundwater is used as a potable source in the future, residents, students, daycare children, and indoor workers could also have dermal contact with groundwater during domestic activities such as washing hands, bathing, and other domestic water use activities (e.g., washing dishes). As noted above, given the shallow depth to groundwater in some areas of the site and use of groundwater for irrigation, it is possible that residents and workers could have dermal contact with irrigation water and/or shallow groundwater during digging activities. Even though dermal exposures with non-potable groundwater used for irrigation or during digging are likely to be minor, this exposure scenario will be evaluated quantitatively for residents, outdoor workers, and construction/utility workers.

Inhalation of Air Impacted by Groundwater

For volatile chemicals in shallow groundwater, vapors can infiltrate into buildings and inhalation of indoor air can be an important exposure pathway. Inhalation exposures of indoor air will be evaluated quantitatively for residents, students, daycare children, and indoor workers. For residents, if deep groundwater is used as a potable source in the future, inhalation of volatiles from home use of potable groundwater, such as showering/bathing or other domestic water uses (e.g., dishwasher use), can also be an important exposure pathway. Thus, this hypothetical future exposure scenario was evaluated quantitatively for the resident (a residential exposure scenario is the most conservative scenario and would be protective of other receptor populations).

In an outdoor environment, with one exception (trenches), if vapors derived from shallow groundwater are released to air, they are likely to rapidly dissipate in outdoor ambient air and inhalation exposures are likely to be negligible for most receptors. Even so, when outdoor ambient air data are available, exposures will be evaluated quantitatively. For construction workers performing activities within a trench, it is possible that vapors could occur within the trench. The inhalation of volatiles in trench air could be an important source of exposure. Exposures and risks from trench air will be evaluated quantitatively using modeling for the construction worker.

As noted above, deep groundwater may be used for irrigation at the University of Utah and the Mount Olivet Cemetery but is not used for residential property irrigation. While it is possible for residents near these properties to be exposed to volatiles in outdoor air derived from sprinklers and irrigation water (with the exception of university and cemetery outdoor maintenance workers), no direct contact exposures with sprinkler/irrigation water are expected to occur. In an outdoor environment, any vapors derived from sprinkler/irrigation water will rapidly dissipate in outdoor ambient air and exposure to volatile chemicals is unlikely.

2.1.4.2 Exposures to Seep/Spring Surface Water and Sediment

Several springs and seeps emanate along the East Bench Fault within the ESS residential neighborhood. These seeps and springs are not used as a source of drinking water. However, they often are used to create water features at residential properties (e.g., ponds) and may be used for irrigation (e.g., for residential gardens). Several properties also have sumps in their basements, which means that individuals (e.g., residents, indoor workers) may also come into contact with seep water located inside properties.

Incidental Ingestion of Surface Water and Sediment

It is possible that residents, daycare children, students, and outdoor workers could come into contact in these seeps/springs and incidentally ingest surface water and sediment from these outdoor features. Residents and indoor workers could also come into contact with and incidentally ingest sump water. While these incidental ingestion scenarios are likely to be minor, both scenarios will be evaluated quantitatively in the HHRA.

Dermal Contact with Surface Water and Sediment

Individuals may also have dermal contact with surface water and sediment in seeps/springs and sump water. Even though dermal exposures are likely to be negligible, this exposure scenario will be evaluated quantitatively for all receptor populations.

Inhalation of Air Impacted by Surface Water and Sediment

Volatiles present in seep/spring surface water, sump water, and sediment can be released into the air in the immediate vicinity of the water feature. In an outdoor environment, if vapors derived from surface water/sediment are released into the air, they are likely to rapidly dissipate in outdoor ambient air. In an indoor environment, these volatiles would contribute to indoor air exposures. If sediments were to dry out, it is also possible that sediment particulates could become airborne and inhaled. While these inhalation exposures are likely to be minor in comparison to indoor air exposures, they will be evaluated quantitatively.

2.1.4.3 Exposures to Shallow Soil

Outside of the seep/spring areas, shallow soil (0 to10 feet bgs) contamination at the site is likely to be negligible, with a possible exception near VAMC Buildings 6 and 7, where historical spills of PCE may have occurred. Outdoor and construction workers are the two receptor populations most likely to have potential soil exposures near these buildings.

In general, most human activities would likely involve coming into contact with soils at the ground surface (i.e., within the top 6 inches of soil). However, it is possible that residents and workers could come into contact with deeper soils during specific digging activities, such as during gardening, sprinkler line repair, utility repairs, and building construction excavation. While most residential and worker digging activities would likely extend a few feet in depth (i.e., 2 to 4 feet bgs), construction activities could encounter subsurface soils at much deeper depths (i.e., to 10 feet bgs).

Incidental Ingestion of Soil

Individuals who have direct contact with soil might ingest small amounts that adhere to their hands during outdoor activities. Incidental ingestion of soil can be an important route of human exposure at a site. Therefore, ingestion of soil is considered a potentially complete pathway for residents, daycare children, students, and construction and outdoor workers, and will be evaluated quantitatively in the HHRA.

Dermal Contact with Soil

Receptors may have dermal exposure to contaminated soil. Typically, dermal exposures tend to be minor in comparison to the amount of exposure that occurs by the oral and inhalation routes. Even so, for completeness, dermal exposure to chemicals in soil will be evaluated quantitatively in the HHRA.

Inhalation of Airborne Soil Particulates

Whenever contaminated soils are exposed at the surface, volatiles can be released and fine-grained particles may become suspended in outdoor air by wind and/or human activity. In cases where the soil is disturbed by wind or light human activity (e.g., walking), the amount of particulate material inhaled from air is generally quite small compared to the amount that is typically assumed for incidental ingestion. In an outdoor environment, if vapors and dust derived from surface soil are released into the air, they are likely to rapidly dissipate in outdoor ambient air. Therefore, inhalation of soil-derived vapors and soil particulates generated by wind erosion or walking is considered a minor pathway for most receptors. However, when surface soil is disturbed by mechanical forces, such as during construction activities, dust levels in air may become significant and intake of soil from inhalation of airborne dusts may become similar to, or even higher than, the ingestion pathway. The inhalation of airborne soil particulates will be quantitatively evaluated for workers for outdoor air.

While inhalation of indoor air impacted by soil-derived particulates is possible, exposures are likely to be highest for outdoor air; thus, a quantitative assessment of soil-derived particulates in indoor air will not be performed.

2.1.4.4 Exposures to Homegrown Produce

If residents have home gardens that are irrigated with contaminated seep/spring water, it is possible that homegrown fruits and vegetables can accumulate contaminants in their plant tissues. In addition, if produce items are not washed prior to consumption, soil particles adhering to the produce surface can also be consumed (this is particularly important for root vegetables). Humans that consume homegrown fruits and vegetables have the potential to be exposed to contamination in and on these produce items. Homegrown produce ingestion is not expected to occur in non-residential settings.

The site-related contaminants of interest for this site (i.e., PCE and its degradation products) are volatile chemicals that have minimal tendency to accumulate in plant tissue. Research on the fate of PCE and other chlorinated solvents in plants grown in contaminated soil is usually focused on phytoremediation methods because these chemicals are rapidly metabolized and transpired from plant tissues and do not accumulate (Agency for Toxic Substances and Disease Registry [ATSDR] 2008). The AOU1 HHRA provided a review of a study performed by researchers at Utah State University on the potential for TCE uptake into plant tissues (Doucette et al. 2007). This study showed that, while TCE uptake was occurring, concentrations were not detected in edible fruits and vegetables. Other fate and transport studies also show TCE is taken up into plants but is infrequently detected in tissue residues (Schroll et al. 1994; Schnabel et al. 1997).

While there are few studies on the uptake of PCE in garden produce, the AOU1 HHRA concluded that the TCE findings were relevant to PCE owing to the similarity in chemical structure between PCE and TCE. This assumption is further supported by studies performed by researchers investigating the phytoremediation of PCE by woody trees. A University of Georgia study did not find evidence of PCE phytoaccumulation in the leaves of cottonwood or willow trees (Nzengung 2006). Mass balance assessments for a study conducted by the University of Washington using poplar trees showed that the total mass of PCE in water was reduced by 99 percent (%) and accumulation in the trees was found to be minor (James et al. 2009). These studies show that accumulation of PCE and its daughter products into homegrown produce is unlikely.

These laboratory studies are supported by a garden produce field investigation conducted by ATSDR at a site in Wisconsin where soil in a community garden area was contaminated with PCE derived from dry-cleaner solvents (ATSDR 2008). In this investigation, 32 tissue samples were collected from a variety of garden vegetables, but all samples were non-detect for PCE.

The AOU1 HHRA also derived a conservative screening level for PCE in irrigation water of 300 micrograms per liter (µg/L), which is protective of a homegrown produce consumption scenario. This screening level was developed based on literature-derived water-to-vegetable models and default assumptions on homegrown produce consumption rates for residents. The screening level does not account for volatile organic compound (VOC) mass losses associated with volatilization during the irrigation process, plant transpiration and metabolism of VOCs, or chemical loss during food preparation (e.g., peeling, cooking, and canning). Therefore, application of this screening level may overestimate potential risks.

Maximum detected concentrations of PCE in groundwater (230 µg/L) and in surface water (82 µg/L) at the site are below this screening level, which further supports the conclusion that risks from consumption of homegrown produce that has been irrigated with seep/spring water is

unlikely to contribute significantly to total exposures. Therefore, further quantitative risk characterization of exposures to homegrown produce is not performed.

2.2 Data Summary

Because of the initial detection of PCE in 1990, numerous investigations have been conducted to characterize the source of contamination and the potential threats to human health and the environment. Section 2.3 of the RI provides a detailed summary of the historical investigations prior to the AOU1 and the OU2 investigations.

The RI for the site was initiated in 2015 to characterize the nature and extent of contaminants. Historically, the site was divided into two OUs to investigate potential impacts to the environment and downgradient receptors. AOU1 was designated based on the immediate public health concerns for residents of the ESS area related to indoor air inhalation exposure to PCE and its breakdown products. OU2 was designated for investigation and delineation of the groundwater PCE plume and source area. In 2019, AOU1 and OU2 were combined into OU1.

Section 3 of the RI describes the study area objectives, investigative approach, and investigative activities completed for studies performed in support of the RI. In brief, the RI investigative approach included:

- Monitoring well installation and groundwater sampling
  - Lithological logging during drilling completed at the site and the collection of geotechnical data to determine the hydrostratigraphic framework
  - Installation of the monitoring well network to laterally and vertically delineate the PCE groundwater plume
  - Installation of monitoring wells along plume transects for the evaluation of mass flux/discharge
  - Time-discrete sampling of monitoring wells to evaluate concentration trends across the site
  - Measurement of water levels at all wells, including multilevel wells, to determine groundwater flow direction, horizontal gradients, and vertical gradients
  - Collection of multiple lines of evidence to evaluate natural attenuation, including concentration trends, geochemical parameters, concentrations of degradation products, compound specific isotopic analysis, fraction of organic carbon, magnetic susceptibility, and ferrous iron minerals
- Hydrogeologic testing, specifically slug testing, to measure hydraulic conductivity and determine groundwater velocity
- Soil and soil vapor sampling in the suspected source areas to evaluate the suspected release points and determine if an ongoing source to groundwater is present

- Shallow groundwater, surface water, and soil gas sampling in the ESS area to delineate the area of the site that could be susceptible to VI
- Indoor air sampling of buildings to determine the risks to occupants due to VI

The environmental samples collected during the RI are also the basis for quantifying exposures in the HHRA and are described briefly below. In the RI, investigation activities are summarized by investigation type. Thus, the same convention is retained herein. Investigative activities completed for the former AOU1 are described first, followed by the former OU2, and then the combined OU1.

Detailed information on each investigation, including the governing plans, study designs, sampling procedures, and analytical results is presented in Section 3 of the RI. A summary of this information is presented below, focusing on the studies and results that are used to inform exposures for the HHRA.

2.2.1 Groundwater

Numerous groundwater sampling activities were conducted during the RI to determine the extent of VOCs in groundwater associated with the former dry-cleaning operation on the VAMC campus. Section 3.5 of the RI describes the groundwater investigation activities that are summarized briefly below. **Table H.2-1** presents chemical concentration summary statistics for groundwater across all RI sampling activities. The groundwater results across all the RI sampling activities were used to identify COPCs for further evaluation in the risk calculations, as discussed in Section 2.3.3.

AOU1 Groundwater Sampling (2015–2016)

During the AOU1 sampling activities, temporary groundwater monitoring points (referred to as GW- prefix locations in Figure 3-1 of the RI) were installed with a Geoprobe direct-push technology (DPT) rig to assess the nature and extent of VOCs in shallow groundwater in the ESS area. Groundwater sampling was conducted at the 44 temporary well points between February and April 2016. Ten temporary monitoring points (GW-10, GW-11, GW-16, GW-20, GW-49, GW-50, GW-52, GW-53, GW-59, and GW-61) were left in place as temporary piezometers. The piezometers were sampled during three additional events that occurred in July 2016, September 2016, and August 2019. Groundwater samples were submitted for analysis of VOCs, semi-volatile organic compounds (SVOCs, including 1,4-dioxane), metals (total and dissolved), total dissolved solids (TDS), anions, pH, and total alkalinity.

OU2 Groundwater Sampling (2017–2019)

During the OU2 sampling activities, groundwater samples were collected from the newly installed monitoring wells (MW- prefix well identifiers in Figure 3-2 of the RI) in September–October and November–December 2018. Several existing wells were also sampled in November–December 2018. All existing wells were sampled again in March and April 2019. Collected groundwater samples were analyzed for VOCs, SVOCs, 1,4-dioxane, metals, mercury, pesticides, total organic carbon (TOC), TDS, anions, and alkalinity.

Phase 1 OU2 Groundwater Sampling (2019–2020)

Phase 1 OU2 groundwater sampling activities were conducted to assist in further characterization of the hydrogeology, temporal trends, and nature and extent of contamination. Three groundwater sampling events were conducted in December 2019, June 2020, and September–October 2020. Figure 3-2 in the RI summarizes the groundwater sampling locations. Collected groundwater samples were submitted for analysis of VOCs, 1,4-dioxane, total metals (unfiltered), TOC, TDS, anions (sulfate, chloride), alkalinity, nitrate and nitrite, and dissolved gases (methane, ethane, ethene).

Phase 2 OU1 Groundwater Sampling (2020–2021)

Phase 2 OU1 groundwater sampling activities were conducted to assist in the further characterization of the hydrogeology, temporal trends, and nature and extent of contamination. Two groundwater sampling events were conducted under Phase 2 OU1 and were completed in December 2020 and March 2021. Collected groundwater samples were submitted for analysis of VOCs, total metals (unfiltered), TOC, anions (sulfate, chloride), alkalinity, nitrate and nitrite, and dissolved gases (methane, ethane, ethene). A subset of samples was submitted for 1,4-dioxane analysis.

In addition, the replaced piezometers (designated "RG-" for residential groundwater; RI Figure 3-3) were sampled in April 2021. Samples were analyzed for VOCs and water quality parameters (temperature, dissolved oxygen [DO], pH, specific conductance, oxidation reduction potential [ORP], and turbidity) were recorded if there was sufficient volume.

2.2.2 Surface Water

Surface water sampling was completed during the RI to determine the extent of VOCs in groundwater emanating from seeps and springs in the ESS area. Section 3.7 of the RI describes the surface water investigative activities, which are summarized briefly below. **Table H.2-2** presents chemical concentration summary statistics for surface water across all RI sampling activities. The surface water results across all the RI sampling activities were used to identify COPCs for further evaluation in the risk calculations, as discussed in Section 2.3.3.

In 2016, surface water samples were collected from identified and accessible seeps, springs, sumps, and Red Butte Creek during the AOU1 investigation. Several of the springs discharge to the municipal stormwater system; therefore, water samples were also collected from selected Salt Lake City stormwater sewer manholes, located in and downgradient of AOU1, to determine if groundwater seepage and discharge from foundation drains is conveying VOC-impacted water to stormwater lines. Surface water and stormwater sampling locations are presented in RI Figure 3-5. Samples were analyzed for VOCs and SVOCs, total metals, anions, and TDS.

In October and December 2018 during the OU2 investigation, nine surface water locations were sampled, including six locations previously sampled and three new locations (one new spring discharge location and two locations in Red Butte Creek) (RI Figure 3-5). Samples were analyzed for VOCs, SVOCs, metals, pesticides, TOC, TDS, anions, and alkalinity.

Between December 2019 and March 2020, seven surface water locations were sampled during the Phase 1 OU2 investigation activities (RI Figure 3-5). Grab samples were collected at each location and analyzed for VOCs.

In April 2021, 11 surface water locations were sampled, including eight locations previously sampled and three new locations during the Phase 2 OU1 investigation activities (RI Figure 3-5). Surface water sampling consisted of flow rate measurements, water quality field parameter measurements, and collection and shipment of samples for analytical testing. Water quality parameters included pH, specific conductivity, temperature, ORP, DO, and turbidity. Analytical samples were collected for VOCs, total metals, dissolved gases, anions, nitrate/nitrite, TOC, and alkalinity.

2.2.3 Soil Gas

Soil gas sampling in the ESS area was completed for AOU1 in 2015, 2016, and 2017, and for OU1 in 2021. Results from the sampling events have been used to delineate VOC contamination to determine the area susceptible to VI. Sections 3.8 and 3.9 of the RI describe the soil gas sampling activities for the ESS and source areas, respectively. Each sampling effort is summarized briefly below. **Table H.2-3** presents chemical concentration summary statistics for soil gas across all RI sampling activities, including both the ESS and source area sampling efforts. The soil gas results across all the RI sampling activities were used to identify COPCs for further evaluation in the risk calculations, as discussed in Section 2.3.3.

2.2.3.1 East Side Springs Sampling

Near-slab (collected within 5 feet of the foundation of a structure) soil gas samples in the ESS neighborhood were collected in 2015, 2016, and 2017 during the AOU1 investigation. Soil vapor probes (SVPs) were installed adjacent to structures where indoor air samples were collected. Soil gas sample locations are presented in RI Figure 3-6. All samples were analyzed by a portable gas chromatography/mass spectrometer (Inficon HAPSITE® [HAPSITE]) for a subset of VOCs, including PCE, TCE, and cis-1,2-DCE. Confirmation SUMMA canister samples were collected at a subset of HAPSITE sampling locations.

In 2015, open-field (collected greater than 5 feet from an occupied building foundation) soil gas samples were also collected and analyzed by HAPSITE or EPA Method TO-15/TO-15 SIM (SUMMA). These samples were collected at seeps and springs expected to be impacted by VOCs, and at locations adjacent to streets and sidewalks in AOU1. However, only a subset of AOU1 investigation samples collected in 2015 were suitable for quantitative use in the HHRA (see Section 2.2.6 for additional information).

In December 2020, SVPs were installed at selected monitoring wells where elevated PID readings were observed in the subsurface vadose zone, or where coarse-grained intervals were encountered. In March 2021, soil gas samples were collected at four monitoring wells with SVPs in the ESS area: MW-32, MW-34, MW-37, and MW-38 (RI Figure 3-7). In April 2021, soil gas samples were collected from seven additional residential groundwater sampling locations with SVPs (designated "RG") where groundwater is present deeper than 10 feet bgs. In August 2021, soil gas samples were collected at four previously sampled SVPs installed with RG wells in the ESS area: RG-01, RG-04, RG-07, and RG-08 (RI Table 3-5 and RI Figure 3-7). Soil gas samples were collected in SUMMA canisters and analyzed for VOCs.

2.2.3.2 Source Area Sampling

Soil gas sampling was conducted in 2018, 2019, and 2021 on the VAMC campus and in Sunnyside Park to identify and delineate source(s) of PCE contamination. Samples were collected from previously installed and newly installed SVPs in both soil borings and monitoring well borings and from Vapor Pins®.

In 2018 and 2019, during OU2 investigation activities, SVPs and Vapor Pin subslab sampling ports were installed in areas near VAMC Buildings 6 and 7 and within these two buildings by drilling sampling ports in the basement and ground floor (RI Figure 3-8). In addition, SVPs were also installed along the sewer line from the VAMC Buildings 6 and 7 to the Sunnyside Park area (RI Figure 3-9). Soil gas sampling was conducted using Tedlar bags and analyzing via HAPSITE for PCE, TCE, and cis-1,2-DCE. Approximately 10 percent of HAPSITE samples were confirmed with SUMMA canisters and analyzed for VOCs.

In March 2021, 46 soil gas samples were collected on the VAMC campus and in Sunnyside Park (RI Figures 3-10 and 3-11, respectively). Soil gas samples were collected in SUMMA canisters and analyzed for VOCs.

2.2.4 Air

Several indoor air investigations have been conducted to determine the extent and magnitude of VOCs inside residences and buildings at the site. These investigations have also collected outdoor air samples to provide information on VOC concentrations in ambient air.

During these investigations, three types of devices have been used to sample/analyze VOCs in air—an in-field HAPSITE, SUMMA canisters, and passive absorbent samplers. Section 5.1.1 provides a detailed discussion of the advantages and disadvantages of each method. Earlier RI studies (2015–2017) primarily measured air concentrations using a HAPSITE. The HAPSITE is useful because it can provide real-time measurements of the site-related volatiles (e.g., PCE, TCE, cis-1,2-DCE) without having to send samples to an off-site laboratory. SUMMA canisters are typically collected over a 24-hour period and submitted to an off-site laboratory for analysis of the full list of VOCs. During more recent RI studies (2019–2020), indoor air samples were also collected using Radiello passive absorbent samples (collocated with the SUMMA canister locations) and submitted for VOC analysis to an off-site laboratory.

A summary of the locations and type of VI sampling that was conducted is presented in RI Table 3-7, and the sampling locations are illustrated in RI Figure 3-12. Each of these investigations are summarized briefly below. **Table H.2-4** and **Table H.2-5** present chemical concentration summary statistics for indoor and outdoor air, respectively, across all RI investigations. The indoor and outdoor air sample results across all the RI investigations were used to identify COPCs for further evaluation in the risk calculations, as discussed in Section 2.3.3.

AOU1 Air Sampling (2015–2017)

The AOU1 VI sampling activities occurred between 2015 and 2017. The AOU1 investigation focused on areas with the highest potential for VI occurrence while also evaluating spatial extent. Repeat sampling of some structures was completed to assess temporal variability. The VI investigation was a broad sampling effort that included areas where previous surface water

sampling indicated the presence of PCE contamination and other locations where property owners agreed to indoor air sampling.

Sampling activities consisted of indoor and outdoor air HAPSITE testing and SUMMA canister sample collection. Sampling was conducted in accordance with the VI protocol, as presented in Appendix H of the AOU1 RI (EA Engineering, Science, and Technology, Inc. [EA] 2019). In general, this protocol includes identification of potential interior background sources, collection of negative and ambient pressure HAPSITE testing samples to characterize the indoor air space, positive pressure real-time quantitative sample collection using a HAPSITE, indoor air sample verification using SUMMA canisters, and outdoor ambient air samples using a HAPSITE. HAPSITE samples were analyzed for PCE, TCE, cis-1,2-DCE, and VC, and SUMMA canisters were submitted for laboratory analysis for VOCs.

The 2015 AOU1 VI investigation started in January and ended in April. This event included sampling 36 structures at multiple locations within the structures, including 30 private residences, four schools, a church, and an elderly care facility (RI Table 3-7). Some of the data collected during this event were qualified during data validation because field data collection was not completed in compliance with the QAPP. As stated in Section 6.2.5 of the Final AOU1 RI Report (EA 2019), these data are not usable for the risk assessment but can still be used to qualitatively evaluate the extent of VI or be a supporting line of evidence for other data.

The 2016 AOU1 VI investigation started in February and continued through June. This event included 16 residential structures and one school. Five of the residential structures sampled in 2016 had previously been sampled in 2015 (0003-H, 0011-H, 0017-H, 0018-H, and 0037-H). During this investigation, it was determined that a HAPSITE was not sufficiently sensitive for quantifying VC at concentrations below the project screening level, so VC was removed from the HAPSITE calibration.

The last round of sampling for the AOU1 field investigations took place during March and April 2017. This event included 8 new residential structures and 10 previously sampled residential structures. In the eight new structures, HAPSITE testing was conducted both with pressure cycling and under ambient conditions. In the 10 previously sampled locations, HAPSITE testing was conducted with no pressure cycling and 24-hour SUMMA sampling was completed.

OU2 Air Sampling (2018–2019)

The OU2 VI sampling activities occurred between 2018 and 2019. In 2018, a VI investigation was conducted to assess the presence of VI in Buildings 6, 7, 13, and 20 on the VAMC campus. A subsequent VI investigation was conducted in 2019 to assess the extent of VI in Building 6 and 7.

In January/February 2019, indoor air samples were collected at Buildings 6, 7, 13, and 20 for analysis by HAPSITE. Following this initial screening, the building was screened for potential background sources and all identified sources were removed. These locations were then re-screened using a HAPSITE to determine where to collect laboratory confirmation samples. It was determined, based on non-detectable PCE concentrations in Buildings 13 and 20, to not collect laboratory confirmation samples in those buildings. In September 2019, a follow-up investigation at Buildings 6 and 7 was conducted to collect SUMMA canister samples for

laboratory analysis of VOCs. Both indoor and outdoor air samples were collected within and outside each building.

Phase 1 OU2 Air Sampling (2019–2021)

The Phase 1 OU2 indoor air sampling investigation followed procedures outlined in the revised VI Protocol (CDM Smith 2019). Visual inspections of homes and interviews of property owners were conducted to provide information on potential background sources. A walk-through was then performed to identify where to locate the vapor sampling devices. Sample collection included a 24-hour SUMMA canister in tandem with 3-week passive absorbent samplers during the heating season under normal conditions to provide a longer-term average exposure sample. Additionally, air samples were collected in Tedlar bags for HAPSITE analysis to provide a rapid concentration level assessment at each location. SUMMA canister samples were analyzed for VOCs by modified EPA Method TO-15/TO-15 SIM. Passive samples were analyzed for VOCs by modified EPA Method TO-17. Outdoor air samples were collected using SUMMA canisters.

The investigation during 2019–2020 was based on historical data collected during the AOU1 VI investigations. This included nine prioritized homes that had previously been investigated and five homes based on nearby soil gas concentrations found during the AOU1 RI. Of the 14 homes identified, 6 homeowners agreed to participate during the 2019–2020 investigation. An additional 24 homeowners also volunteered for participation based on public outreach efforts conducted by VA. The investigation was conducted over three, 3-week sampling periods: December 2019 to early January 2020, January 2020, and March 2020.

Phase 2 OU1 Air Sampling (2021–2022)

In March 2021, sampling was performed inside Buildings 6 and 7 during the Phase 2 OU1 VI investigation. Prior to collecting indoor air samples, an indoor source assessment was conducted, and suspected indoor sources were removed. Sampling included the collection of 24-hour SUMMA canisters for laboratory analysis of VOCs. A subset of locations was selected from the September 2019 investigation of Buildings 6 and 7, including one basement location and one main floor/occupied space in each building.

Additional indoor air sampling was conducted in August 2021 at 10 residential structures. Of these 10 locations, nine had been previously investigated and one home was newly investigated. Locations were selected based on prior investigation results, prioritizing properties with elevated historical PCE concentrations. At each property, a 24-hour SUMMA canister was collected and analyzed for VOCs by modified EPA Method TO-15/TO-15 SIM. Outdoor air samples were also collected at four properties within the ESS area.

An additional round of indoor air sampling was conducted in March 2022 at 34 residential structures, one church, and one school. Of these locations, 7 residential structures had been previously investigated and 27 residential structures were newly investigated. Additionally, indoor air samples were collected from two buildings on the VAMC campus (Buildings 20 and 32). At each property, a 24-hour SUMMA canister sample was collected and analyzed for VOCs by modified EPA Method TO-15/TO-15 SIM. Outdoor air samples were also collected at five properties within the ESS area and at one location on the VAMC campus.

2.2.5 Soil/Sediment

Drilling investigations at the site have been completed for grab groundwater sampling, soil sampling, monitoring well installation, and soil gas probe installation. During these investigations, soil/sediment[8] samples were collected for VOC analysis, geotechnical parameters, and geochemical parameters, and lithologic logs were completed to delineate VOC contamination and provide geologic and hydrogeologic site information.

A summary of the soil/sediment sampling efforts conducted during the RI is presented in Section 3.3 of the RI. Investigations for each medium are summarized briefly below. **Table H.2-6** presents chemical concentration summary statistics for soil/sediment. These results were used to identify COPCs in soil/sediment for further evaluation in the risk calculations, as discussed in Section 2.3.3.

2.2.5.1 Sediment

During the AOU1 sampling activities, three sediment samples were collected in May 2016 in conjunction with surface water sampling locations (RI Figure 3-1). Two sediment samples (SS-09 and SS-26), collocated with surface water sampling locations along Sunnyside Avenue, were collected from seeps and springs with known detections of PCE (SW-09 and SW-26). The third sediment sample (SS-01), which served as a baseline sample, was collocated with a surface water sample (SW-01) in which PCE was not detected in the shallow groundwater. Sediment samples were analyzed for SVOCs and metals.

2.2.5.2 Soil

The RI summarizes results for all collected soil samples. In brief, 298 soil samples have been collected from 44 locations on the VAMC campus, in Sunnyside Park, and near the Mount Olivet Cemetery. All soil samples were analyzed for VOCs. These soil samples were collected from depths ranging from less than 1 foot to 355 feet bgs. However, the HHRA only includes those soil samples collected from a depth interval that could potentially be encountered by the human receptor populations of potential concern (i.e., 0 to 10 feet bgs); the HHRA refers to samples within this depth interval as "shallow soils."

A total of 41 shallow soil samples were collected (collocated with soil gas sampling performed in 2018 and 2019 during the OU2 sampling activities). These shallow soil samples were collected near VAMC Building 7 and along the sanitary sewer line, which are the areas where shallow soil contamination has the potential to be highest.

2.2.6 Data Usability Evaluation

All groundwater, surface water, soil gas, indoor and outdoor air, soil, and sediment samples collected during the RI investigations (AOU1, OU2, Phase 1 OU2, and Phase 2 OU1) were considered for use in the HHRA. These samples have been collected in accordance with approved sampling plans and the resulting data have undergone data validation. Section 3.13 of the RI discusses any deviations from the governing plans and any implications arising from these deviations. Individual data summary reports (DSRs) as well as the investigation-specific data

[8] In the HHRA, the term "sediment" is used when describing materials that have been collected within seep/spring features and from the bottom of creek beds. The term "soil" is used when describing all other materials (e.g., collected from boreholes).

usability evaluations and data validation reports are provided as appendices to the RI (**Appendix A** [AOU1 RI DSRs], **Appendix B** [OU2 DSRs], **Appendix C** [Phase 1 DSRs], and **Appendix D** [Phase 2 DSRs]). All results are included in the selection of COPCs and exposure estimates, with the following exclusions:

- As presented in Section 6.2.4 in the AOU1 RI (EA 2019), some of the soil gas, indoor air, and outdoor air SUMMA and HAPSITE data collected in 2015 was qualified during data validation because field data collection was not completed in compliance with the QAPP. In addition to the data validation, a third-party QA assessment was conducted by an independent contractor to determine usability of the data due to field and laboratory documentation discrepancies. The data evaluation for usability determined these data were not usable quantitatively for the risk assessment but can still be used qualitatively in defining the extent of VI. Valid usable SUMMA data for the risk assessment are available for 5 of the 36 structures sampled in 2015. Valid usable HAPSITE data are available for 7 of the 36 structures sampled in 2015. All data generated during the 2016 and 2017 VI investigations were deemed usable to achieve project objectives.
- Results rejected by the data validator (R-qualified) were excluded. J-qualified results were retained, although it is recognized results are estimated and could be potentially biased high or low. Non-detect results (U-qualified) were also retained.
- Field quality control (QC) samples (e.g., field, trip, and equipment rinsate blanks, and field duplicates) and laboratory QC samples (e.g., matrix spikes, internal standards, laboratory duplicates) were excluded.
- Air sample results were retained for use regardless of the sampling/analysis method (i.e., HAPSITE, SUMMA, passive). The uncertainty assessment (Section 5.1.1) provides an evaluation of whether there are important differences in risk conclusions as a function of sampling/analysis method.
- Results for soil samples collected at depths below 10 feet bgs were excluded, as it is not expected that the human receptor populations of interest would encounter soils below this depth cutoff.

The uncertainty assessment (Section 5.1) discusses any data limitations of the results used in the risk calculations. The uncertainty assessment includes a data adequacy evaluation for each sampled medium that reviews the spatial and temporal representativeness of the available results, a discussion of analytical measurement accuracy, and an evaluation of detection limit adequacy for infrequently detected chemicals.

2.3 Chemicals of Interest

COPCs are chemicals that exist in the environment at concentrations that might be of potential health concern to humans, based on a comparison to conservative health-based screening levels, which are identified for further evaluation in a quantitative risk assessment. As noted previously, PCE and its degradation products, including TCE, cis-1,2-DCE, and VC, are the primary contaminants of interest at the site, and 1,4-dioxane was investigated as potentially site related.

However, in accordance with EPA guidance (EPA 2002a), the HHRA will evaluate exposures for all identified COPCs, regardless of their source, to fully characterize potential health risks.

2.3.1 COPC Selection Process

The COPC selection compares the maximum detected concentration for each analyte in each medium to a risk-based screening level. This screening level is the concentration of a chemical in a medium that is believed to pose negligible health risk to a specified population of human receptors. If the maximum detected concentration exceeds the screening level, the chemical is selected as a COPC. If the maximum detected concentration does not exceed the screening level, the chemical is unlikely to pose any health risk, even to maximally exposed individuals, and it is not selected as a COPC. This COPC selection procedure is intended to be conservative; that is, it is expected that some chemicals may be identified as COPCs that are of little or no concern, but no chemicals of authentic concern will be overlooked.

Chemicals were not excluded as COPCs on the basis of detection frequency. Even if there is only a single detection above the screening level, the chemical was retained as a COPC. However, if a chemical is infrequently detected in the site samples (i.e., a detection frequency of less than 10%), then the adequacy of the laboratory detection limit was also assessed as part of the COPC selection process (Section 2.3.4). For chemicals that are infrequently detected, if the detection limit is below the screening level, then the chemical is unlikely to be of concern and was excluded from further evaluation. However, if the detection limit is above the screening level, this is identified as a source of uncertainty and is discussed in the uncertainty assessment (Section 5).

The COPC selection procedure classifies each chemical into one of five categories:

- **Quant.** – COPC for quantitative evaluation; these are chemicals with maximum detected concentrations greater than the screening level that will be assessed quantitatively in the risk assessment.
- **Qual. 1** – Chemical requires a qualitative evaluation; these are chemicals that are infrequently detected but have an inadequate method detection limit (MDL) and will be discussed qualitatively in the uncertainty assessment.
- **Qual. 2** – Chemical requires a qualitative evaluation; these are chemicals that are not detected, but they do not have screening levels to assess MDL adequacy and will be discussed qualitatively in the uncertainty assessment.
- **Bkg.** – These are detected chemicals that do not have screening levels; thus, the only way to assess if they may be site related or elevated is to make comparisons between site samples and background (or reference) locations in the uncertainty assessment.
- **No further evaluation** – These are either detected chemicals with maximum detected concentrations below the screening level or chemicals that were not detected, and the achieved MDL is adequate relative to the screening level (Section 2.3.4); thus, risks from these chemicals are likely to be negligible and they are not evaluated further in the HHRA.

Tables H.2-1 through H.2-6 present the COPC selection for each environmental medium.

2.3.2 Source of Screening Levels

The screening levels used in the COPC selection were obtained from three sources:

- EPA's residential regional screening levels (RSLs) for soil, tap water, and indoor air (EPA 2022a)
- EPA's residential vapor intrusion screening levels (VISLs) for groundwater and subslab soil gas (EPA 2022b)
- UDEQ initial screening levels (UDEQ 2005)

The EPA residential RSLs are risk-based concentrations for soil, tap water, and indoor air derived using default residential exposure assumptions and based on a target cancer risk of 1E-06 or a target non-cancer hazard quotient (HQ) of 0.1, whichever resulted in the lower RSL. (Section 4.1 provides information about how cancer risks and HQs are expressed and interpreted.)

The EPA VISLs are risk-based concentrations for groundwater and subslab soil gas that are protective of residential exposures to indoor air and derived using default attenuation factors for groundwater to indoor air (0.001) and soil gas to indoor air (0.03). Similar to the RSLs, the VISLs are derived based on a target cancer risk of 1E-06 or target non-cancer HQ of 0.1, whichever results in the lower VISL.

UDEQ identifies initial screening levels for several volatiles commonly identified as contaminants in soil and groundwater within sites with leaking underground storage tanks, including benzene, toluene, ethylbenzene, xylene, and naphthalene. These initial screening levels were used to identify potential COPCs in soil and groundwater.

Attachment H.1 presents the RSLs, VISLs, and UDEQ screening levels for each medium. The COPC selection was performed using the lowest screening level across all sources (**Table H.2-7**).

2.3.3 COPC Selection Outcome

Detailed tables showing the summary statistics, screening levels used, the COPC selection process, and COPC outcome for each medium are presented in **Tables H.2-1 through H.2-6**. **Table H.2-8** summarizes the list of chemicals in each medium selected as COPCs for further quantitative assessment. These COPCs are summarized below:

- **Groundwater:** Metals (aluminum, antimony, arsenic, barium, beryllium, cobalt, copper, iron, lead, manganese, nickel, thallium, vanadium, zinc); SVOCs/VOCs (1,4-dioxane, bis[2-ethylhexyl]phthalate, 2-hexanone, benzene, bromodichloromethane, chloroform, cis-1,2-DCE, dibromochloromethane, ethylbenzene, PCE, TCE)
- **Soil Gas:** SVOCs/VOCs (1,3-butadiene, benzene, bromodichloromethane, chloroform, ethyl acetate, PCE, TCE)
- **Indoor/Outdoor Air:** SVOCs/VOCs (1,3-butadiene, benzyl chloride, 1,4-dioxane, 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, 1,2,4-trichlorobenzene, 1,2,4-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloroethane, 1,2-dichloropropane, 1,3,5-trimethylbenzene, 1,4-dichlorobenzene, benzene, bromodichloromethane,

bromomethane, carbon tetrachloride, chloroform, ethyl acetate, ethylbenzene, hexachloro-1,3-butadiene, isopropyl alcohol, xylenes (m-, p-, and o-), methylene chloride, naphthalene, PCE, TCE, vinyl acetate, VC)

- **Soil/Sediment:** Metals (arsenic, cadmium, cobalt, manganese, thallium)
- **Surface Water:** Metals (aluminum, antimony, arsenic, cadmium, cobalt, copper, iron, lead, manganese, thallium, vanadium, zinc); SVOCs/VOCs (bis[2-ethylhexyl]phthalate, benzene, bromodichloromethane, chloroform, PCE, TCE)

All organic COPCs were retained for further evaluation in the risk assessment. Metals have been excluded from quantitative analysis, as discussed below. Consistent with EPA risk assessment guidance (EPA 2002a), organic COPCs were evaluated quantitatively in the risk characterization regardless of their potential source; however, the majority of these COPCs are not expected to be site related. The contribution from non-site-related background sources is discussed in the uncertainty assessment (Section 5.4.1). Chemicals identified as requiring qualitative evaluation or a background evaluation because of a lack of screening levels or inadequate detection limits are discussed further in the uncertainty assessment (Section 5.3.2).

Notice that no organic COPCs were identified for soil/sediment. The residential RSL for soil accounts for exposures from incidental ingestion, dermal contact, and inhalation (both inhalation of airborne particulates and volatiles derived from soil). The residential RSL is also lower than the RSL for workers. Thus, the fact that no organic COPCs were identified for soil/sediment means risks are likely to be negligible for all receptor populations, including residents, daycare children, students, and workers (outdoor and construction workers) for all soil/sediment exposure routes. No further quantitative assessment of soil/sediment is performed in the HHRA. However, risks are still quantitatively evaluated for construction workers during trench digging activities in areas that have been potentially impacted by contaminated groundwater. The list of organic COPCs identified for groundwater will be evaluated for this exposure scenario.

2.3.3.1 Exclusion of Metals from Risk Characterization

Several metals were identified as COPCs in soil/sediment, surface water, and groundwater. Metals are naturally present in the earth's crust and expected to be detected in soil/sediment and water. Based on the site history, there is no expectation that elevated metal concentrations would be attributable to site-related impacts. Even so, in accordance with EPA guidance (EPA 2002a), which states that COPCs that have both release-related and background-related sources should be included in the risk assessment, potential risks from exposures to metals are discussed in **Attachment H.2** to inform risk management decisions, but metals have not been retained for further characterization in the HHRA.

2.3.3.2 Refinement of Surface Water COPC Selection

As shown in **Table H.2-2**, several organic chemicals were identified as COPCs in surface water. Surface water at the site was collected from identified and accessible seeps, springs, sumps, and Red Butte Creek. When selecting surface water COPCs, maximum surface water concentrations were compared to EPA's residential tap water RSLs. These RSLs are protective of exposures to tap water (e.g., drinking water and showering) and based on default residential assumptions (e.g., 350 days per year of exposure). However, exposures to site surface water are likely to occur

much less frequently than exposures to tap water and seeps/springs are not expected to be used as a source of drinking water. Thus, the COPC selection for surface water was further refined to take into consideration the lower exposure potential. In this refined screen, the default residential tap water RSLs for each route of exposure (i.e., ingestion, dermal, and inhalation) were scaled to develop a seep/spring-specific surface water screening level that accounts for the following:

- Exposure frequency for all three exposure routes was reduced from 350 days per year, which is the default exposure frequency for an indoor residential scenario, to 96 days per year (assuming seep/spring surface water contact occurs 3 days per week for 8 months of the year).
- Exposure time for inhalation exposures to surface water was reduced from 24 hours per day, which is the default for an indoor residential scenario, to 2 hours per day.
- Default residential drinking water ingestion rate was reduced to assume 10% of the total daily drinking water intake rate in derived from incidental ingestion of surface water. For a child, this is equivalent to approximately 1/3 of a cup of surface water per day.
- Skin surface area for dermal exposure was reduced from a whole-body bathing scenario to only the head, hands, forearms, lower legs, and feet.

Table H.2-9 illustrates the outcome of the refined screen for surface water. As shown, with the exception of PCE, none of the organic COPCs for surface water have maximum concentrations above the seep/spring-specific surface water screening levels. For PCE, the maximum surface water concentration is slightly above the screening level (across all exposure routes); however, this exceedance would result in a cancer risk of 3E-07 and non-cancer hazard of 0.1. This means risks are likely to be negligible for all receptor populations for all surface water exposure routes and all COPCs. No further quantitative assessment of seep/spring surface water is performed in the HHRA.

2.3.3.3 Refinement of Shallow Groundwater COPC Selection for Digging Exposure Scenarios

When selecting groundwater COPCs, maximum groundwater concentrations were compared to EPA's residential tap water RSLs. As noted above, these RSLs are protective of residential exposures to potable water (e.g., drinking water and showering). For the site, one of the groundwater exposure scenarios of interest is contact with shallow (non-potable) groundwater that could occur during digging activities, such as a resident digging in a garden or an outdoor maintenance worker performing sprinkler line maintenance. However, exposures to shallow groundwater are likely to occur much less frequently than exposures to tap water and the incidental ingestion of groundwater during digging would be much lower than the daily drinking water intake rate. Thus, the COPC selection for exposures to shallow groundwater during digging activities was further refined to take into consideration the lower exposure potential. In this refined screen, the default residential tap water RSLs for each route of exposure (i.e., ingestion, dermal, and inhalation) were scaled to develop a digging-specific shallow groundwater screening level that accounts for the following:

- Exposure frequency for all three exposure routes was reduced from the residential default of 350 days per year to 32 days per year (assuming shallow groundwater contact during digging occurs once per week for 8 months of the year).
- Exposure time for inhalation exposures to surface water was reduced from 24 hours per day, which is the default for an indoor residential scenario, to 2 hours of digging time per day.
- Water ingestion rate for a resident was scaled to represent 10% of the total daily water intake rate being derived from shallow groundwater during digging activities.
- Skin surface area for dermal exposure was reduced from a whole-body bathing scenario to only the head, hands, forearms, lower legs, and feet.

Table H.2-10 illustrates the outcome of the refined screen for contact with shallow groundwater during digging. As shown, with the exception of PCE, none of the organic COPCs for groundwater have maximum concentrations above the digging-specific groundwater screening levels. For PCE, the maximum groundwater concentration is slightly above the screening level (across all exposure routes); however, this exceedance would result in a cancer risk of 3E-07 and non-cancer hazard of 0.1. This means risks from contact with shallow groundwater during digging activities are likely to be negligible for both residents and outdoor workers for all exposure routes and all COPCs. No further quantitative assessment of exposures during digging is performed for these two receptors in the HHRA. However, because construction worker exposures during excavation activities have the potential to be higher because of the accumulation of volatiles derived from groundwater into trench air, exposures to shallow groundwater by construction workers have still been assessed quantitatively in the risk characterization, as discussed in Section 4.4.1.

2.3.4 Evaluation of Laboratory Detection Limits

The COPC selection focuses on detected chemicals. Excluding chemicals that are not detected is appropriate if concentrations were measured using analytical methods with adequate detection limits (i.e., the analytical instrument would have detected the chemical if it were present at a level of concern).

Usually, there are three different types of laboratory limits identified in laboratory deliverables—the method detection limit (MDL), the practical quantitation limit (PQL), and the reporting limit (RL). The MDL is defined as the minimum concentration of a chemical that can be detected and reported with 99% confidence that it is present. The PQL is normally about 3 to 10 times higher than the MDL and considered the lowest concentration that can be accurately measured and quantified, as opposed to detected. The RL is set by the laboratory based on the contractual requirements and is usually set equal to, or slightly higher than, the PQL.

Typically, the detect/non-detect status (i.e., U-qualified) for a chemical is determined based on the MDL. If the chemical is not present at a level above the MDL, the result is reported as non-detect (i.e., U-qualified). When the chemical is present at a concentration between the MDL and the PQL (or RL), the result is reported as an estimated concentration (i.e., J-qualified). When the chemical is present at a concentration above the PQL (or RL), there is usually no qualifier assigned to the reported concentration, unless there are other potential data quality issues being

flagged for the result (e.g., poor matrix spike recovery). J-qualified results are acceptable for use in risk assessment (EPA 1989). U-qualified results are also acceptable for use in risk assessment, but their utility depends upon the adequacy of the achieved MDL.

Therefore, to ensure that analytical detection limits are adequate to support risk management decision-making, the average MDL (across all non-detect samples) for each chemical with a detection frequency less than 10% was compared to its respective screening level. If the MDL is higher than the screening level, these are identified as "Qual. 1" in the COPC selection summary tables (**Tables H.2-1 through H.2-6**), and potential issues related to the laboratory limit adequacy are discussed in the uncertainty assessment.

2.4 Evaluation of Chemical Exposures

This section presents the basic equations that were used to estimate chronic exposures from COPCs and determine cancer risks and non-cancer hazards in the HHRA. This section also provides the exposure parameters for each receptor population and explains how exposure point concentrations (EPCs) were calculated for each exposure area.

2.4.1 Basic Equations

The basic equations used to estimate exposure differ by exposure route (ingestion, dermal contact, and inhalation).

2.4.1.1 Ingestion Exposures

The amount of a chemical which is ingested is referred to as "intake" or "dose." Exposure via ingestion is quantified using an equation of the following general form:

$$DI = C \cdot (IR / BW) \cdot (EF \cdot ED / AT) \cdot RBA$$

Where:

DI = Daily intake of chemical (mg of chemical per kg of body weight per day [mg/kg-day]).

C = Concentration of the chemical in the contaminated environmental medium (soil, sediment, water, and food) to which the person is exposed. The units are mg/L for water and mg/kg for solid media.

IR = Intake rate of the contaminated environmental medium. The units are L/day for aqueous media and kg/day for solid media.

BW = Body weight of the exposed person (kg).

EF = Exposure frequency (days per year). This describes how often a person is likely to be exposed to the contaminated medium over the course of a typical year.

ED = Exposure duration (years). This describes how long a person is likely to be exposed to the contaminated medium during their lifetime.

AT = Averaging time (days). This term specifies the length of time over which the average dose is calculated. Usually, two different averaging times are considered:

"Chronic" exposure includes averaging times on the scale of years (typically ranging from 7 years to 70 years). This exposure duration is used when assessing non-cancer risks.

"Lifetime" exposure employs an averaging time of 70 years. This exposure interval is selected when evaluating cancer risks.

RBA = Relative bioavailability of the chemical

Note that the factors EF, ED, and AT combine to yield a factor between 0 and 1. Values near 1 indicate that exposure occurs nearly continuously over the specified averaging period, while values near 0 indicate that exposure occurs infrequently.

For mathematical convenience, the general equation for calculating dose can be written as:

$$DI = C \cdot HIF \cdot RBA$$

Where:

HIF = Human intake factor. This term describes the average amount of an environmental medium contacted by the exposed person each day. The value of HIF is typically calculated by:

$$HIF = (IR / BW) \cdot (EF \cdot ED / AT)$$

The units of HIF are L/kg-day for aqueous media and kg/kg-day for solid media.

Because one or more exposure parameters (e.g., intake rates, body weight, and exposure frequency) may change as a function of age, exposure calculations for non-cancer risks are often performed separately for children and adults. However, for estimating excess cancer risks from exposure to a chemical, because the same individual may be exposed beginning as a child and extending into adulthood, exposure is calculated as the time-weighted average (TWA) lifetime exposure:

$$DI_{TWA} = C \cdot [(IR_c / BW_c) \cdot (EF_c \cdot ED_c / AT) + (IR_a / BW_a) \cdot (EF_a \cdot ED_a / AT)] \cdot RBA$$

where the subscripts "c" and "a" refer to child and adult, respectively.

An accurate assessment of human exposure to ingested chemicals requires knowledge of the amount of chemical absorbed from the gastrointestinal tract into the body from the site medium compared to the amount of absorption that occurred in the toxicity studies used to derive the toxicity factors. This ratio (i.e., amount absorbed from the site medium compared to the amount absorbed in toxicity tests) is referred to as relative bioavailability (RBA). In general, it is assumed that organic chemicals have an RBA of 1.0, meaning that all the ingested chemical is able to be absorbed regardless of the exposure medium.

2.4.1.2 Dermal Exposures

Exposure to a chemical by the dermal pathway is generally expressed in terms of the amount of chemical that is absorbed into the body rather than the amount ingested or inhaled. The amount of a chemical that is absorbed across the skin is referred to as the dermally absorbed dose (DAD), which is quantified using an equation of the following general form (EPA 2004):

$$DAD = DA_{event} \cdot EF \cdot ED \cdot EV \cdot SA / (BW \cdot AT)$$

Where:

DAD = Dermally absorbed dose (mg/kg-day).

DA_{event} = Absorbed dose per event (mg of chemical per square centimeter of skin surface area per event [mg/cm^2-event]). This is medium specific and is further described below.

EF = Exposure frequency (days per year). This describes how often a person is likely to be exposed to the contaminated medium over the course of a typical year.

ED = Exposure duration (years). This describes how long a person is likely to be exposed to the contaminated medium during their lifetime.

EV = Event frequency (events/day). This describes the number of times per day a person comes in contact with the contaminated medium.

SA = Surface area (cm^2). This describes the amount of skin exposed to the contaminated medium.

BW = Body weight of the exposed person (kg).

AT = Averaging time (days). This term specifies the length of time over which the average dose is calculated.

Recall that no COPCs were identified for dermal exposures to soil/sediment. For organic chemicals in water, the specific equation used to compute DA_{event} depends upon the exposure duration and is estimated as follows:

Short Duration (if $t_{event} \leq t^*$):

$$DA_{event} = 2 \cdot FA \cdot K_p \cdot C \cdot SQRT(6 \cdot \tau_{event} \cdot t_{event} / \pi)$$

Long Duration (if $t_{event} > t^*$):

$$DA_{event} = FA \cdot K_p \cdot C \cdot \{t_{event} / (1 + B) + 2 \cdot \tau_{event} \cdot [(1 + 3B + 3B^2) / (1 + B)^2]\}$$

Where:

t_{event} = Event duration (hours per event). This describes how long a person is likely to be exposed to the contaminated medium per exposure event.

t^* = Time to reach steady state (hours); calculated as $2.4 \cdot \tau_{event}$

FA = Fraction absorbed water (unitless). This value is chemical-specific. **Table H.2-11** summarizes the fractions for each COPC.

K_p = Dermal permeability coefficient of compound in water (cm/hr). This value is chemical specific. **Table H.2-11** summarizes the dermal permeability coefficients for each COPC.

C = Chemical concentration in water (mg of chemical per cubic centimeter of water).

τ_{event} = Lag time per event (hours per event). This value is chemical specific. **Table H.2-11** summarizes the lag times for each COPC.

B = Dimensionless ratio of the permeability coefficient of a chemical through the stratum corneum relative to its permeability coefficient across the viable epidermis. This value is chemical-specific. **Table H.2-11** summarizes the B values for each COPC.

For mathematical convenience, the general equation for calculating DAD can be written as:

$$DAD = DA_{event} \cdot HIF_{water}$$

Where:

$$HIF_{water} = (SA \cdot EV \cdot EF \cdot ED) / (BW \cdot AT)$$

The units of HIF are cm^2-event/kg-day for water exposures to organic chemicals.

As described above, when the same individual may be exposed beginning as a child and extending into adulthood, exposure was calculated as the TWA lifetime exposure for evaluating cancer risks. For non-cancer risks, children and adults were evaluated separately.

2.4.1.3 Inhalation Exposures

Inhalation exposures are evaluated in accordance with the inhalation dosimetry methodology presented in EPA's *Risk Assessment Guidance for Superfund (RAGS) Part F: Inhalation Risk Assessment* (EPA 1994, 2009).

In accordance with EPA (2009), the human intake equation does not include an inhalation rate or body weight because the amount of the chemical that reaches the target site is not a simple function of these factors. Therefore, the inhaled exposure concentration (EC) for chronic exposures is calculated as:

$$EC = C \cdot (ET \cdot EF \cdot ED / AT)$$

Where:

EC = Exposure Concentration (in units of micrograms per cubic meter [$\mu g/m^3$]). This is the time-weighted concentration based on the characteristics of the exposure scenario being evaluated.

C = Concentration of the chemical in air ($\mu g/m^3$) to which the person is exposed.

ET = Exposure time (hours per day). This describes how long a person is likely to be exposed to the contaminated medium over the course of a typical day.

EF = Exposure frequency (days per year). This describes how often a person is likely to be exposed to the contaminated medium over the course of a typical year.

ED = Exposure duration (years). This describes how long a person is likely to be exposed to the contaminated medium during their lifetime.

AT = Averaging time (hours). This term specifies the length of time over which the time-weighted average concentration is calculated.

For mathematical convenience, the general equation for exposure concentration can be written as:

$$EC = C \cdot TWF$$

Where:

TWF = Time-weighting factor (unitless). The value of TWF is calculated by:

$$TWF = (ET \cdot EF \cdot ED / AT)$$

As described above, when the same individual may be exposed beginning as a child and extending into adulthood, exposure was calculated as the TWA lifetime exposure for evaluating cancer risks. For non-cancer risks, children and adults were evaluated separately.

2.4.2 Exposure Parameters

For every exposure pathway of potential concern, it is expected there will be differences between individuals in the level of exposure at a specific location because of differences in intake rates, body weights, exposure frequencies, and exposure durations. Thus, there is normally a wide range of average daily intakes between different members of an exposed population. Therefore, all daily intake calculations must specify what part of the range of doses is being estimated. Typically, attention is focused on intakes that are "average" or are otherwise near the central portion of the range, and on intakes that are near the upper end of the range (e.g., the 95th percentile). These two exposure estimates are referred to as central tendency exposure (CTE) and reasonable maximum exposure (RME), respectively. Both CTE and RME scenarios were evaluated in the HHRA; however, the main summary tables present risks for RME because risk management decisions for Superfund are typically based on RME estimates (EPA 1991).

When selecting CTE parameters, the intake variables for a specific exposure pathway (e.g., body weight, ingestion rate, exposure frequency, exposure duration) are usually based on mean or median values, such that the CTE represents the "typical" or "average" exposure. When selecting RME parameters, the intake variables are selected such that the combination of the intake variables results in a "reasonable" maximum estimate of the daily intake (EPA 1989). In other words, some inputs are set equal to mean values (e.g., body weight) and some inputs are set equal to upper-bound values (e.g., ingestion rates, exposure frequency, and exposure duration), such that the resulting combination yields an estimate that is an RME (EPA 1989).

As noted above, because exposure parameters (e.g., intake rates, body weight, and exposure frequency) may change as a function of age, residential exposure parameter values were selected separately for children and adults. **Tables H.2-12 through H.2-17** list the CTE and RME exposure parameters and resultant HIF values for each receptor population of interest, respectively. Some of the values are informed by site-specific information, some are based on EPA default guidelines, and others are based on professional judgment or are estimated by extrapolation from other sites. The footnotes in the tables provide the basis and supporting rationale for each selected exposure parameter.

2.4.3 Exposure Areas

An exposure area is an area where a receptor may be exposed to one or more environmental media over a specified period of time (e.g., lifetime). In general, receptors are assumed to move about at random within an exposure area. For a residential scenario, exposure areas are typically equal to the property boundary and exposures are evaluated on a property-by-property basis. However, this site encompasses hundreds of properties and, although attempts have been made to sample as many residences, schools, and businesses as possible within the PCE plume extent, measured indoor air data is not available for every property. Thus, the risk assessment evaluates properties with measured indoor air data differently from those without measured indoor air data. For properties with measured indoor air data, the exposure area is the property boundary and evaluated on a property-by-property basis. For properties without measured indoor air data, measured data for soil gas samples and shallow groundwater wells are used qualitatively to estimate the potential for exposure.

2.4.4 Exposure Point Concentrations

Based on the assumption of random exposure over an exposure area, risk from a chemical within an exposure area is related to the arithmetic mean concentration of that chemical averaged over the entire exposure area for the entire time frame of exposure. Since the true arithmetic mean concentration cannot be calculated with certainty from a limited number of measurements, EPA recommends that the 95% upper confidence limit (95UCL) of the arithmetic mean for each exposure area be used as the EPC when calculating exposure and risk at that location (EPA 1992).

The mathematical approach most appropriate for computing the 95UCL of a dataset depends on several factors, including the number of data points available, the shape of the distribution of the values, and the degree of censoring (EPA 2002b). Because of the complexity of this process, the EPA Technical Support Center has developed a software application called ProUCL v5.1.002 (EPA 2015a) to assist in the estimation of 95UCL values. ProUCL calculates 95UCLs for a dataset using several different strategies and recommends which 95UCL is considered preferable based on the properties of the dataset. In the calculation of the 95UCL, results ranked as non-detect are evaluated relative to the MDL in ProUCL using regression on order statistics. To calculate reliable 95UCLs, ProUCL recommends at least 8 to 10 samples for the exposure area.

If ProUCL provides more than one recommended 95UCL to use, the higher value was used as the EPC. If the 95UCL exceeds the maximum concentration, the recommended 95UCL was selected, with the exception of cases where the recommended 95UCL is based on bootstrap-t. In these cases, the 95UCL based on the 99% Chebyshev inequality was selected per ProUCL guidance (EPA

2015a). The use of the Chebyshev inequality to compute UCLs tends to yield more conservative (but stable) UCLs than other methods available in ProUCL software.

2.4.4.1 For Properties with Measured Indoor Air Data

In the HHRA, initially, risk estimates were calculated based on the maximum concentration for each exposure area, regardless of sampling method. This provides a conservative estimate of exposures and allows for a first-tier evaluation of properties. For example, when evaluating inhalation exposures to indoor air inside a residence, the EPC was set equal to the maximum concentration across all indoor air samples. If risks were acceptable[9] based on the maximum concentration, no further risk calculations were performed. However, if risks based on the maximum concentration were potentially unacceptable, the HHRA evaluated property-specific information, such as the differences in indoor air concentrations as a function of the sampling method (i.e., HAPSITE, SUMMA, and passive), temporal and spatial patterns in indoor air levels, background sources, as well as nearby soil gas, outdoor ambient air, and shallow groundwater data, to refine the risk interpretation.

2.4.4.2 For Properties without Measured Indoor Air Data

As described above, for properties without measured indoor air data, the available soil gas and shallow groundwater data were used qualitatively to evaluate the potential for VI exposures. Plume delineation maps for PCE and TCE were developed to illustrate the boundary where potentially unacceptable risks to site-related contaminants could occur to target areas for future assessment during the remedial design. The groundwater plume boundaries were modeled to estimate both an average plume extent and the 95UCL plume extent to show how data variability and uncertainty influence the predicted plume size.

2.4.4.3 Construction Worker Exposures

Because the depth to groundwater can be very shallow at the site, with groundwater present within several feet of the ground surface in some areas and daylighting in seeps/springs in other areas, construction workers have the potential to come into contact with shallow groundwater during digging activities. For construction workers performing activities within a trench, it is possible that vapors could occur within the trench. For the purposes of this exposure scenario, it is assumed digging activities could extend to depths of 10 feet bgs. Therefore, when evaluating construction worker exposures to shallow groundwater, the dataset was restricted to samples collected within 10 feet of the ground surface.

No well-established models are available for estimating migration of volatiles from groundwater into a construction trench. One available model, which is contained within the Virginia Department of Environmental Quality (VDEQ) Virginia Unified Risk Assessment Model (VURAM v3.1) (VDEQ 2020), can estimate air concentrations in a trench based on groundwater concentrations for a default construction worker scenario (**Table H.2-17**). The model is a combination of a vadose zone model and a box model. The model allows for evaluation of two groundwater depth scenarios, one where groundwater is less than 15 feet bgs and the other where groundwater is 15 feet or more bgs. Because the depth to groundwater at the site is shallow (within 15 feet bgs in some areas), the model was set to evaluate groundwater less than

[9] Section 4.1 contains information about how risks are interpreted.

15 feet bgs. Because trench construction activities likely would be conducted within a smaller construction zone, exposures were evaluated on a location-by-location basis (i.e., a piezometer location or a well location). For these calculations, if there was adequate data to compute the 95UCL for the location (i.e., eight or more samples), the 95UCL was used as the EPC. If there was not enough data to compute the 95UCL, the maximum concentration was used as the EPC. EPCs for volatiles in groundwater were input into the model to quantify potential exposures and risks for a default construction worker excavation scenario. **Attachment H.3** presents the VURAM output files for the evaluation of construction worker exposures to shallow groundwater.

Even if construction workers do not come into contact with shallow groundwater during digging activities (i.e., in areas where groundwater is greater than 10 feet bgs), if contaminated soil gas is present, construction workers could also be exposed to volatiles that accumulate within a trench. In addition to modeling construction worker exposures from direct contact with shallow groundwater, potential inhalation exposures were also evaluated in VURAM using measured soil gas data. Soil gas exposures were evaluated within the ESS area, near VAMC Buildings 6 and 7, near the VAMC campus sewer line, and within Sunnyside Park. Soil gas samples included in this evaluation were restricted to those collected at depths up to 10 feet bgs and also included subslab samples collected at the VAMC campus buildings.

2.4.4.4 Hypothetical Future Use of Groundwater as Drinking Water

Currently, there is no potable use of contaminated groundwater at the site. However, to inform risk management decisions, the risk assessment evaluated a hypothetical scenario in which deep groundwater is used as a potable source in the future. For this scenario, exposures and risks were evaluated on a well-by-well basis for the subset of wells that represent deeper groundwater, including MW-03RB, MW-13L, MW-08C, MW-01D, MW-03RC, MW-03RD, MW-34C, and MW-34D. MW-03RB is one of the deep zone wells where some of the highest PCE concentrations have been measured and likely represents a worst-case future use scenario. The other deep aquifer wells are all within the lateral plume boundary. For these calculations, because there was not enough data (i.e., eight or more samples and at least four detects) to compute the 95UCL for each well, the maximum concentration was used as the EPC for each well.

Section 3
Toxicity Assessment

The objective of a toxicity assessment is to identify the types of adverse health effects that are caused by a particular chemical, and to determine how the appearance of these adverse effects depends upon exposure level. In addition, the toxic effects of a chemical frequently depend upon the route of exposure (oral, inhalation, and dermal) and the duration of exposure. Thus, a full description of the toxic effects of a chemical includes a listing of the adverse health effects the chemical may cause, and how the occurrence of these effects depends upon dose, route, and duration of exposure. For the purposes of the HHRA, focus will be on long-term chronic exposures.

The toxicity assessment process is divided into two parts—the first characterizes and quantifies the non-cancer effects of the chemical, while the second addresses the cancer effects. This two-part approach is employed because there are typically major differences in the time course of action and the shape of the dose-response curve for cancer and non-cancer effects.

This section provides information on how non-cancer and cancer toxicity values are derived and presents the toxicity values that were used to quantify potential human health risks in the HHRA.

3.1 Non-Cancer Effects

Essentially all chemicals can cause adverse health effects at a sufficient dose. However, when the dose is sufficiently low, typically no adverse effect is observed. Thus, in characterizing the non-cancer effects of a chemical, the key parameter is the threshold dose at which an adverse effect first becomes evident. Doses below the threshold are considered to be safe, while doses above the threshold are likely to cause an effect.

The threshold dose is typically estimated from toxicological data (derived from studies of humans and/or animals) by finding the highest dose that does not produce an observable adverse effect, and the lowest dose which does produce an effect. These are referred to as the no-observed-adverse-effect level (NOAEL) and the lowest-observed-adverse-effect level (LOAEL), respectively. The threshold is presumed to lie in the interval between the NOAEL and the LOAEL. However, in order to be conservative (protective), non-cancer risk evaluations are not based directly on the threshold exposure level but rather on a value referred to as the reference dose (RfD) or reference concentration (RfC). The RfD is used to evaluate oral exposures (e.g., incidental ingestion of soil, ingestion of drinking water, ingestion of dietary items) and is reported in units of mg/kg-day. The RfC is used to evaluate inhalation exposures and is reported in units of mg/m^3. The RfD and RfC are estimates (with uncertainty spanning perhaps an order of magnitude) of a daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime.

The RfD and RfC values are derived from the NOAEL, LOAEL, or benchmark dose by dividing by an uncertainty factor (UF) that reflects the limitations of the data used. If the data are from studies in humans, and if the observations are considered to be very reliable, the UF may be as

small as 1. However, the UF is normally at least 10, and can be much higher if the data are limited. UFs are assigned to account for uncertainty arising from extrapolation of animal data to humans, the use of a LOAEL instead of a NOAEL, the use of less than chronic exposure, and other limitations in the available data (e.g., lack of reproductive data).

The effect of dividing the NOAEL or the LOAEL by a UF is to ensure that the RfD or RfC is not higher than the threshold level for adverse effects. Thus, there is always a "margin of safety" built into a RfD and RfC, and levels equal to or less than the RfD or RfC are nearly certain to be without any risk of adverse effect. Levels higher than the RfD or RfC may carry some risk; however, because of the margin of safety, a level above the RfD or RfC does not mean that an effect will necessarily occur. The protectiveness of this margin of safety will vary from chemical to chemical, depending upon the quality of the data and the size of any applied UF. A chemical for which large UF has been applied will generally have a higher margin of safety than a chemical with a smaller UF.

3.2 Cancer Effects

For cancer effects, the toxicity assessment process has two components. The first is a qualitative evaluation of the weight of evidence (WOE) that the chemical does or does not cause cancer in humans. Previously, this evaluation was performed by EPA using the system summarized below:

WOE Group	Meaning	Description
A	Known human carcinogen	Sufficient evidence of cancer in humans
B1	Probable human carcinogen	Suggestive evidence of cancer incidence in humans
B2	Probable human carcinogen	Sufficient evidence of cancer in animals, but lack of data or insufficient data in humans
C	Possible human carcinogen	Suggestive evidence of carcinogenicity in animals
D	Cannot be evaluated	No evidence or inadequate evidence of cancer in animals or humans
E	Not carcinogenic to humans	Strong evidence that it does not cause cancer in humans

EPA developed a revised classification system for characterizing the weight of evidence for carcinogens (EPA 2005a). However, this system has not yet been implemented for a number of chemicals, so the older classification scheme will be retained for use in this assessment.

For chemicals that are classified in Group A, B1, B2, or C using EPA guidelines (EPA 1986), the second part of the toxicity assessment is to describe the carcinogenic potency of the chemical. This is done by quantifying how the number of cancers observed in exposed animals or humans increases as the dose increases. Typically, it is assumed that the dose-response curve for cancer has no threshold, arising from the origin and increasing linearly until high doses are reached. Thus, the most convenient descriptor of cancer potency is the slope of the dose-response curve at low doses (where the slope is still linear). This is referred to as the slope factor (SF), which has dimensions of risk of cancer per unit dose.

Estimating the cancer SF is often complicated by the fact that observable increases in cancer incidence usually occur only at relatively high doses, frequently in the part of the dose-response curve that is no longer linear. Thus, it is necessary to use mathematical models to extrapolate from the observed high-dose data to the desired (but unmeasurable) slope at low-dose. To account for the uncertainty in this extrapolation process, EPA typically chooses to employ the 95UCL of the slope as the SF. That is, there is a 95% probability that the true cancer potency is lower than the value chosen for the SF. This approach ensures that there is a margin of safety in cancer risk estimates.

For inhalation exposures, cancer risk is characterized by an inhalation unit risk (IUR) value. This value represents the upper-bound excess lifetime cancer risk estimated to result from continuous lifetime exposure to a chemical at a concentration of 1 µg/m^3 in air.

3.3 Toxicity Values for Ingestion and Inhalation Exposures

Toxicity values (RfD, RfC, SF, and IUR values) established by EPA are listed in the Integrated Risk Information System (IRIS) (EPA 2022c). Other toxicity values are available as interim recommendations from EPA's Superfund Technical Assistance Center operated by the National Center for Environmental Assessment (NCEA). A toxicity value hierarchy was developed by EPA for use in site-specific risk assessments (EPA 2003). This hierarchy provides an order of preference of toxicity values, with Tier 1 being the preferred source of toxicity information, if available, then Tier 2, followed by Tier 3. The recommended hierarchy of toxicity values is:

- Tier 1 – EPA's IRIS: IRIS assessments have undergone external peer review in accordance with EPA peer review guidance at the time of the assessment. IRIS health assessments contain EPA consensus toxicity values.
- Tier 2 – EPA's Provisional Peer-Reviewed Toxicity Values (PPRTVs): The Office of Research and Development/NCEA/Superfund Health Risk Technical Support Center develops PPRTVs on a chemical-specific basis when requested by EPA's Superfund program.
- Tier 3 – Other Toxicity Values: Tier 3 includes additional EPA and non-EPA sources of toxicity information, such as the California Environmental Protection Agency and ATSDR. Priority should be given to those sources of information that are the most current, values that are publicly available, transparent in their derivation process, and have been peer reviewed.

The EPA RSL tables include a summary of toxicity values derived from these sources using the tiered system described above. EPA maintains and updates these tables biannually (EPA 2022a). All toxicity values used in this assessment were taken from the most recent version of the RSL tables (May 2022).

Tables H.3-1 and **H.3-2** show the toxicity values for evaluating ingestion and inhalation exposures, respectively, for each COPC. For non-carcinogens, these tables also provide information on the target tissues for chronic exposures. Target tissues are important for the evaluation of combined non-cancer effects across multiple chemicals, as described in Section 4.1.1.

3.4 Toxicity Values for Dermal Exposures

Oral toxicity factors (oRfDs and oSFs) are expressed in terms of toxicity per unit dose of chemical ingested, rather than in terms of toxicity per unit amount of chemical absorbed. However, the equations for characterizing dermal contact with chemicals provides exposure values that are based on absorbed dose rather than ingested dose. Thus, oral RfD and slope factor values must be adjusted for use in evaluating dermal exposures as follows:

$$RfD_{dermal} = RfD_{oral} \cdot \text{Oral absorption fraction}$$

$$SF_{dermal} = SF_{oral} / \text{Oral absorption fraction}$$

Table H.3-1 lists the oral absorption fractions (ABS_{GI}) used to adjust oral toxicity values for assessing dermal exposure, as recommended in EPA (2004), and the resulting dermal-specific toxicity values. If chemical-specific oral absorption fractions are not available, a value of 1.0 was assumed in accordance with dermal guidance (EPA 2004) (i.e., the oral toxicity values are used without adjustment).

3.5 Evaluation of Carcinogens with Mutagenic Modes of Action

For chemicals identified as having a mutagenic mode of action for carcinogenesis, cancer risks were estimated in accordance with the *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens* (EPA 2005b). There are three carcinogenic COPCs selected with a mutagenic mode of action—methylene chloride, TCE, and VC. When evaluating exposures to mutagenic carcinogens, the default age-dependent adjustment factors (ADAFs) were applied to the cancer slope factor to account for differences in potency that may occur from exposure during early life (up to age 16), as follows:

- 0 to < 2 years: ADAF = 10
- 2 to < 16 years: ADAF = 3
- ≥ 16 years: ADAF = 1 (i.e., no adjustment necessary)

EPA (2005b) further indicates that any grouping of ages in the exposure assessment will need to be integrated with the ADAF age groupings to derive age-group-specific risk estimates. For each age interval 'i,' the cancer risk for exposure by a specified pathway (e.g., oral) is computed as:

$$Risk_i = C \cdot (HIF \cdot ED_i / ED_{total}) \cdot SFo \cdot ADAF_i$$

Where:

$Risk_i$ = Excess cancer risk for age interval 'i'

C = concentration of chemical in the exposure medium (e.g., mg/L for water)

HIF = human intake factor for the exposure medium (e.g., L/kg-day for water)

ED_i = exposure duration for age interval 'i' (years)

ED_{total} = total exposure duration (years)

SFo = oral cancer slope factor $(mg/kg\text{-}day)^{-1}$

$ADAF_i$ = Age-dependent adjustment factor for age interval 'i' (unitless)

Total risk to the individual is the sum of the risks across all age intervals:

$$\text{Total Risk} = Risk_{0-<2} + Risk_{2-<16} + Risk_{16+}$$

As seen in the equation above, the HIF term is time-weighted (ED_i / ED_{total}) to be specific to the age interval 'i.'

For TCE, IRIS suggests that the kidney risk be assessed using the mutagenic equations and the liver and non-Hodgkin's lymphoma (NHL) be addressed using the standard cancer equations (EPA 2011a). Therefore, as explained on EPA's RSL website,[10] the adult SFo of 4.6E-02 $(mg/kg\text{-}day)^{-1}$ is segregated into two SFo values—one specific to evaluating kidney risks [9.3E-03 $(mg/kg\text{-}day)^{-1}$] and one for evaluating liver and NHL risks [3.7E-02 $(mg/kg\text{-}day)^{-1}$]. Similarly, the adult IUR of 4.1E-06 $(\mu g/m^3)^{-1}$ is also segregated into two IUR values: one specific to evaluating kidney risks [1.0E-06 $(\mu g/m^3)^{-1}$] and one for evaluating liver and NHL risks [3.1E-06 $(\mu g/m^3)^{-1}$].

[10] https://www.epa.gov/risk/regional-screening-levels-frequent-questions#FQ50

Section 4
Risk Characterization

This section provides a summary of the equations that were used to compute non-cancer hazards and cancer risks for COPCs in the HHRA and describes how these results will be interpreted. This section also presents the risk results for each exposure scenario and receptor and then discusses the lines of evidence used to support the overall risk conclusions.

4.1 Basic Risk Calculation Approach

The following subsections provide the basic approach for characterizing non-cancer hazards and cancer risks for chronic exposures.

4.1.1 Non-Cancer Effects

The potential for non-cancer effects from a COPC is evaluated by comparing the estimated site-related exposure for a receptor over a specified time period to the RfD or RfC for that COPC. This ratio of site-related exposure to the safe exposure level is called the HQ. If an individual is exposed to more than one chemical, a screening-level estimate of the total non-cancer hazard is derived simply by summing the HQ values across individual chemicals and exposure pathways. This total is referred to as the hazard index (HI). If the HI value is less than or equal to [≤] 1, non-cancer hazards are not expected from any chemical, alone or in combination with others. If the screening level HI exceeds 1, it may be appropriate to perform a follow-on evaluation in which HQ values are added only across chemicals that affect the same target tissue or organ system (e.g., the liver). This is because chemicals that do not cause toxicity in the same tissues are not likely to cause additive effects.

4.1.1.1 Hazards from Ingestion and Dermal Exposures

The potential for non-cancer effects from ingestion will be evaluated by comparing the estimated daily intake of the chemical over a specific time period with the RfD for that chemical derived for a similar exposure period, as follows (EPA 1989):

$$HQ = DI / RfD$$

Where:

DI = Daily Intake (mg/kg-day)

RfD = Reference Dose (mg/kg-day)

4.1.1.2 Hazards from Inhalation Exposures

For inhalation exposures, the potential for non-cancer effects will be evaluated by comparing the time-weighted EC over a specific time period to the RfC for that chemical, as follows (EPA 2009):

$$HQ = EC / RfC$$

Where:

EC = Exposure Concentration (mg/m^3)

RfC = Inhalation Reference Concentration (mg/m^3)

4.1.2 Cancer Effects

The excess risk of cancer from exposure to a chemical is described in terms of the probability that an exposed individual will develop cancer because of that exposure. Excess cancer risks are summed across all carcinogenic chemicals and all exposure pathways that contribute to exposure of an individual in a given population. The level of total cancer risk that is of concern is a matter of personal, community, and regulatory judgment. In general, EPA considers excess cancer risks[11] that are below 1E-06 to be so small as to be negligible, and risks above 1E-04 to be sufficiently large that some sort of remediation is desirable. Excess cancer risks that range between 1E-04 and 1E-06 are generally considered to be acceptable (EPA 1991), although this is evaluated on a case-by-case basis, and EPA may determine that risks lower than 1E-04 are not sufficiently protective and warrant remedial action. Cancer risks for each chemical are calculated as described in the following subsections.

4.1.2.1 Risks from Ingestion and Dermal Exposures

The excess risk of cancer from exposure to a chemical is described in terms of the probability that an exposed individual will develop cancer because of that exposure. The excess risk of cancer from ingestion exposure to a chemical will be calculated as follows (EPA 1989):

$$\text{Excess Cancer Risk} = 1 - \exp(-DI_L \cdot SF)$$

Where:

DI_L = Daily Intake, averaged over a lifetime (mg/kg-day)

SF = Slope Factor $(mg/kg\text{-}day)^{-1}$

In most cases (except when the product of $DI_L \cdot SF$ is larger than about 0.01), this equation may be approximated by the following:

$$\text{Excess Cancer Risk} = DI_L \cdot SF$$

4.1.2.2 Risks from Inhalation Exposures

The excess risk of cancer from inhalation exposure to a chemical will be calculated based on IUR values, as follows (EPA 2009):

$$\text{Excess Cancer Risk} = EC \cdot IUR$$

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[11] Excess cancer risk can be expressed in several formats. A cancer risk expressed in a scientific notation format as 1E-06 is equivalent to 1 in 1,000,000 or 10^{-6}. Similarly, a cancer risk of 1E-04 is equivalent to 1 in 10,000 or 10^{-4}. For the purposes of this document, all cancer risks are presented in a scientific notation format.

Where:

EC = Exposure Concentration ($\mu g/m^3$)

IUR = Inhalation Unit Risk $(\mu g/m^3)^{-1}$

4.2 Weight of Evidence Approach

For VI exposures, EPA guidance (EPA 2015b) recommends the evaluation of multiple lines of evidence along with the risk calculations to help support (or refute) the exposure assessment and risk estimates. Overall risk conclusions are to be based on the weight of evidence, taking into consideration the strengths and weaknesses of each line of evidence. The lines of evidence considered can include, but are not limited to:

- Site source characteristics
- Site geology and hydrology characteristics
- Groundwater, soil, soil gas, crawl space air, and outdoor air concentrations
- Groundwater plume contours
- Building characteristics
- Spatial/temporal patterns in media concentrations
- Indoor sources of volatile contaminants
- Empirical attenuation factors

Thus, the discussion of the risk results also presents information on other lines of evidence that are helpful in developing overall risk conclusions.

Identification of indoor sources of VOCs is particularly important when indoor air data indicate risks are above a level of concern because exposure could be attributable to indoor sources of contamination at properties (i.e., and not a consequence of site-related impacts). Below are data that will help inform the contribution of indoor anthropogenic sources:

- Property surveys – Documentation of property activities, items stored at the property, use of groundwater, and garage characteristics (e.g., attached versus detached garage, items that are stored in the garage) will be used to determine potential indoor sources.
- Soil gas – Soil gas concentrations that are less than indoor air concentrations would be suggestive that VI may not be the source of indoor air contamination.
- Real-time screening – Use of a photoionization detector (PID) or a HAPSITE can provide real-time information on the presence of indoor sources of VOCs inside a property that might influence indoor air concentrations.

4.3 Site and Source Characteristics

The following sections describe the site geology and hydrology, the extent of the contaminated groundwater plumes, and the areas where VI concerns are likely to be greatest.

4.3.1 Site Geology and Hydrology

The surficial geology at the site is mapped as alluvial fan deposits and lacustrine deposits consisting of gravel, occasional boulders, sand, silt, and clay (Personius and Scott 1992). Overall, the surficial geology grades from coarse-grained alluvial fan deposits to the east, to finer-grained lacustrine deposits to the west. The deposits are very complex and consist of multiple aquifers and semi-confining layers that are laterally discontinuous and internally heterogeneous (EA 2017). The topography of the site slopes to the west/southwest at an approximate grade of 4 percent, until the grade steepens to 10 percent near the East Bench fault west of 1300 East, where springs and seeps emanate from the hillside (i.e., the ESS area) (RI Figure 4-3).

Groundwater flows through perched, unconfined shallow, and semi-confined deep aquifer systems towards the west/southwest, as shown in RI Figure 4-2. This figure also shows a semi-confining unit separating the shallow and deep aquifer that was identified through the evaluation of piezometric heads (further discussion of the aquifers and identification of the semi-confining unit is presented in Section 4.5 of the RI). As the lateral extent of the semi-confining unit between borings is unknown, the semi-confining unit is shown as dashed. The perched zone is present in the eastern area of the site (i.e., near the VAMC campus), where depth to groundwater is approximately 150 to 200 feet bgs. As groundwater flows to the west/southwest, depth to groundwater becomes shallower and intersects the groundwater surface along the hillside between approximately 700 South and Michigan Avenue where seeps and springs are observed (RI Figure 4-3). The East Bench fault is acting as a semipermeable barrier to flow, with groundwater both flowing through the fault and mounding up at the eastern face of the fault. This mounding results in surface discharges to springs and seeps and flowing artesian wells just east of the fault. Both the shallow and deep portion of the shallow aquifer contribute to the surface water discharges observed in this area. Historically, water supply and irrigation well pumping have come primarily from the semi-confined deep aquifer.

4.3.2 Contaminated Groundwater Plume

The most recent results for all sample locations[12] were integrated to show the approximate extent of PCE in groundwater (RI Figure 5-4A and Figure 5-4B). Furthermore, RI Figure 5-5 presents a cross section displaying the vertical extent of the groundwater PCE plume in the shallow and deep aquifers along the plume center.

The PCE plume is bounded vertically and laterally to the east on the VAMC campus by wells MW-05R, MW-23A/B/C, MW-24, MW-25A/B/C, MW-26A/B/D, MW-27, and MW-28 where there have been either low (less than 5 µg/L) or no detections of PCE. The plume is bounded to the southeast by MW-06, to the south by MW-31, and to the north by MW-30. The highest detections of PCE at the VAMC campus occurred at MW-03RA/B/C. PCE concentrations at MW-03RA, screened in the shallow aquifer, have remained above the maximum contaminant level (MCL) at a

[12] Because groundwater is known to discharge to the surface in the ESS area, the most recent concentrations of PCE in groundwater and surface water were included.

relatively constant concentration around 28 µg/L since 2019. At MW-03R, screened in the deep aquifer as shown in RI Figure 5-5, consistently higher concentrations of PCE (170 to 230 µg/L) have been observed since the well was installed in 2018. The plume is vertically bounded in the deep aquifer at this location by MW-03RD, where PCE has only been detected once (0.18 J µg/L in March 2019). The highest detections of PCE downgradient of the VAMC campus have been observed at MW-01S and MW-02. From 1998 to 2021, concentrations at MW-01S have varied from 60 to 210 µg/L, and concentrations at MW-02 have varied from 72 to 296 µg/L. A statistical analysis of the concentration trends is presented in Section 6.7.1 of the RI. In this area, the PCE groundwater plume is bounded in the deep aquifer by MW-01D, which has been non-detect since December 2018.

PCE concentrations greater than 50 µg/L appear again downgradient of MW-34, along the 1400 East transect at MW-08A, MW-18, and MW-19, where maximum PCE concentrations for these three wells were observed in 2018. PCE concentrations at these locations have been decreasing; further evaluation of trends is presented in Section 6.7.1 of the RI. The plume is vertically bounded at MW-08C along the 1400 East transect, as PCE was not detected at this location (RI Figure 5-5).

The PCE groundwater plume with concentrations greater than 50 µg/L is assumed to be continuous from the 1400 East transect into the ESS area (RI Figure 5-4A). PCE concentrations at MW-13D, which is screened in the deeper portion of the shallow aquifer, have consistently been above 50 µg/L. As presented in RI Figure 5-5, PCE concentrations in this area within the shallowest portion of the shallow aquifer are less than 50 µg/L. PCE concentrations in the deeper portion of the shallow aquifer are greater than 50 µg/L.

Other wells within the PCE groundwater plume in the ESS area include MW-14 and MW-16. PCE has been detected at both the shallow and deep intervals of MW-14, with MW-14D having higher detections ranging up to 37 µg/L during September 2018. Three of the eight samples collected at MW-14S have exceeded the MCL with a maximum of 10 µg/L in September 2018. PCE has also been detected at concentrations above the MCL during each sampling event at MW-16S, ranging from 20 to 28 µg/L. PCE has not been detected at MW-16D, indicating a vertical plume boundary at the northern edge of the PCE groundwater plume in the ESS area. The cross section (RI Figure 5-5) shows that the shallow groundwater at both MW-14S and MW-13S has lower levels of PCE (6 µg/L and 14 µg/L, respectively), while PCE in the shallow groundwater at RG-08, RG-02, and RG-03 is greater than 50 µg/L (RI Figure 5-4B). At MW-14D, which is an artesian well, the most recent detection of PCE was 33 µg/L. This suggests the deeper, more contaminated portion of the shallow aquifer is likely contributing to surface water impacts, especially in this area, and explains the occurrence of PCE at concentrations greater than 50 µg/L at SW-166 and SW-35 (RI Figure 5-4B). Further discussion of the extent of PCE in surface water is presented in Section 5.4 of the RI.

The plume in the ESS area is laterally bounded to the north by MW-38S/D; to the west by MW-37S/D, MW-12S/D, and MW-15S/D; and to the south by MW-36 and MW17-S/D. Both MW-38S/D and MW-37S/D have not had any detections of PCE since installation in 2020. Low detections of PCE at MW-12S/D and MW-15S/D have occurred but have not exceeded the MCL and are often non-detect. MW-36 had one estimated detection of PCE in December 2020

(0.28 J µg/L). MW-17S/D have often had detections of PCE during sampling events; however, the detections have been under the MCL of 5 µg/L. The PCE groundwater plume delineation is supported by surface water samples and shallow residential groundwater wells in the area, as presented in RI Figure 5-4B.

As presented in Section 5.3.2 of the RI, geochemical conditions at the site are generally aerobic, with localized areas of reducing conditions where slightly elevated concentrations (greater than 1 µg/L) of PCE degradation products (e.g., TCE, cis-1,2-DCE, VC, ethene, and ethane) are observed (RI Table 5-4). These locations include MW-01S, MW-02, MW-03RB, MW-13S, MW-14S, GW-50/RG-06, and GW-59/RG-09. If a source of organic carbon exists, microorganisms will consume available oxygen, resulting in anaerobic conditions. It is possible that elevated naturally occurring organic carbon is present at these locations because of the presence of clay layers. Anthropogenic sources of carbon may have included historical releases of petroleum products at the site. The localized areas of reducing conditions are not prevalent enough to provide a line of evidence that substantial reduction in contaminant mass through anaerobic biodegradation is occurring; however, increases in daughter products may continue to be observed in groundwater and soil gas in localized areas of the site.

4.3.3 Area of Vapor Intrusion Concern

The development of a soil gas plume in the ESS area is due to volatilization of VOCs from the groundwater plume and migration through the vadose zone; therefore, the area of interest for soil gas and indoor air impacts is defined by the proximity to and the concentrations within the groundwater plume. The shallower the groundwater, the more readily VOCs can volatilize at atmospheric pressure and the shorter the pathway to enter the atmosphere or overlying structures. Therefore, the thickness of the soils above groundwater (i.e., depth to groundwater) is a contributing factor to VI. Also, at some locations in the ESS area, contaminated groundwater daylights and is actively removed from basements using sumps or diverted from properties using French drains, water features, and constructed streams. In these cases, indoor air impacts may not be due to vapor intrusion of soil gas, but rather by intrusion of groundwater and surface water. RI Figures 6-29A and 6-29B show the extent of PCE in groundwater and surface water, depth to groundwater, and the concentration of PCE in soil gas. The black outline shows a vertical and lateral distance of 100 feet to the 5 µg/L PCE concentration contour, which was used to define the initial inclusion zone for assessing VI (EPA 2015b).

Structures where indoor air samples have been collected are summarized in **Table H.4-1** and shown in **Figure H.4-1**. A total of 111 structures, including VAMC campus buildings, and residences, buildings, schools, and churches have been sampled at the site. However, not all sampled structures have indoor data that are usable for the risk assessment; 94 of the 111 structures sampled have usable indoor air data. Indoor air concentrations exceeded the residential indoor air risk-based screening level[13] (RBSL) for PCE (11 µg/m^3) at 18 structures: 0003-H, 0011-H, 0018-H, 0022-S, 0026-H, 0040-H, 0045-S, 0051-H, 0053-H, 0054-H, 0059-H, 0064-H, 0091-H, 0192-H, 0197-H, 0263-H, 0274-H, and 0336-H. Indoor air concentrations

[13] The RBSLs were established in a technical memorandum developed in 2015 (CH2M Hill, Inc. [CH2M] 2015). The RBSLs were derived to be protective of VI exposures for a default residential scenario and based on a target cancer risk of 1E-06 and target hazard quotient of 1.

exceeded the residential indoor air Tier 1 removal action level[14] (RAL) for PCE (41 µg/m^3) and/or TCE (2.1 µg/m^3) at seven structures: 0023-H, 0037-H, 0040-H, 0051-H, 0054-H, 0059-H, and 0197-H. (For properties 0023-H and 0037-H, the Tier 1 RAL exceedances were observed during the 2015 HAPSITE sampling; however, as discussed in Section 2.2.6, these HAPSITE results were not used for quantitative risk characterization. Subsequent data collection efforts at these two properties resulted in useable data that were the basis for the risk calculations.) As can be seen in RI Figure 6-29A, the locations with exceedances of the RBSL and Tier 1 RAL are generally located in the vicinity of the intersection of 900 South and 1200 East. This is the area where groundwater becomes very shallow, the 50 µg/L PCE plume is present, and concentrations of PCE in soil gas exceed the residential soil gas RBSL.

4.3.4 Temporal Patterns

Seasonally variable conditions, such as moisture levels, depth to groundwater, and concentrations of VOCs in groundwater, can lead to seasonally variable concentrations and distributions of vapors in the vadose zone (EPA 2015b).

Measured water levels (RI Table 4-2), from 1998 to 2021 for the oldest wells (MW-01S/D, MW-02, MW-04, and MW-06) show that fluctuations in elevation of up to 12 feet have occurred in the shallow aquifer during this time period. Transducers have been recording water levels at select monitoring wells since 2017, including these locations (results are compiled in **Appendix F** of the RI). The data show that the largest observed groundwater elevation fluctuations between 2017 and 2021 were approximately 4 feet, with the largest fluctuations occurring in wells within the eastern portion of the site.

Statistical trends for all locations with sufficient data (i.e., at least six data points) for analysis are summarized in RI Table 6-5 and presented in RI Figures 6-30 and 6-31, for PCE and TCE, respectively. All available historical data for PCE, TCE, and cis-1,2-DCE were compiled in time-series trend charts for each monitoring well (**Appendix G** of the RI). Overall, the concentrations of PCE in the groundwater plume are decreasing or stable. Generally, PCE is the most substantial contaminant in all wells. Except at locations where PCE is non-detect, TCE and cis-1,2-DCE are one to two orders of magnitude below the concentrations of PCE.

As "stack effects" are generally more significant during the heating season (EPA 2015b), and consistent seasonal variability in water levels and groundwater concentrations were not observed, indoor air samples for residential properties within the site were collected during the heating season to target the most likely occurrence of the highest rates of soil gas entry. Additionally, for this site, the worst-case VI scenario is likely when groundwater-to-surface water discharges are highest, which is also when home moisture issues are worst. The highest water level elevations (as observed in the well transducer data) occurred in winter 2018 and 2020, and the lowest water level elevations occurred in winter 2019 and 2021. This suggests that water level fluctuations are most likely due to variations in annual climate, and seasonal changes in

[14] The Tier 1 RALs were established in CH2M (2015) and were derived to be protective of VI exposures for a default residential scenario and based on a target cancer risk of 1E-05 and target hazard quotient of 1. An exceedance of the Tier 1 RAL indicated that further evaluation and mitigation was needed. For PCE, the Tier 1 RAL derived in CH2M (2015) is 41 µg/m^3. This RAL is noted to differ slightly from the value shown in the May 2021 EPA RSL table (42 µg/m^3). The difference is likely a consequence of rounding.

elevation are minimal. Based on these data, conditions in the winter of 2018 and 2020 were likely characteristic of a high groundwater-to-surface water discharge timeframe.

4.4 Risk Results

The following sections summarize the estimated non-cancer hazards and cancer risks for each exposure scenario. Detailed risk calculations for both CTE and RME scenarios are presented in **Attachments H.3 through H.8**. The main risk summary tables present non-cancer hazards and cancer risks based on RME exposure parameters because risk management decisions for Superfund are typically based on RME estimates (EPA 1991). **Attachment H.9** presents a summary of the CTE risks for comparison purposes when RME risks have the potential to occur, but CTE results are not discussed below.

4.4.1 Construction Worker Exposures

4.4.1.1 Based on Shallow Groundwater

Initially, screening level risk estimates for construction worker exposures were derived using VURAM based on the maximum concentration for each volatile COPC across all shallow groundwater samples (i.e., less than 10 feet bgs). **Attachment H.3-1** provides the VURAM output based on the maximum groundwater concentration, and the risk results are summarized in **Table H.4-2**. As shown, cumulative cancer risks based on a default RME construction worker scenario were within or below EPA's acceptable risk range of 1E-06 to 1E-04 for all COPCs. The cumulative non-cancer HI was greater than 1, primarily because of inhalation exposures to PCE and TCE, which accounted for about 85% of the total hazard.

A further refinement of the evaluation of potential risks for construction workers from PCE and TCE in shallow groundwater was performed on a location-specific basis to evaluate if there were specific areas where unacceptable exposures had the potential to occur. **Table H.4-3** summarizes the non-cancer HI and cancer risk for each well location for construction worker exposures to PCE and TCE in shallow groundwater. As shown, only 3 of 34 shallow groundwater locations (AOU1 piezometer location GW-059 [RI Figure 3-1]), monitoring well MW-14S [RI Figure 3-2] and residential piezometer location RG-06 [RI Figure 3-3]) have potentially unacceptable exposures. All three locations are within the ESS area.

Attachment H.3-2 illustrates the VURAM output of the detailed risk calculations for monitoring well MW-14S. As shown in the attachment, the inhalation of TCE accounts for about 90% of the total exposure; the contribution of dermal and incidental ingestion exposures to TCE and exposures to PCE by all routes are negligible. The risk estimates for GW-059 and RG-06 showed similar results (detailed calculations not presented).

For all three locations, inhalation exposures to TCE in trench air (derived from the volatilization of TCE in groundwater) have the potential to result in non-cancer HIs of 2 for construction workers if shallow groundwater is encountered during excavation activities. These refined construction worker risk estimates assume the entirety of the 125-day trench exposure frequency occurs at a single well location, which is likely to be overly conservative. Given that the RME non-cancer HIs are only slightly greater than 1, and considering that actual trenching time at a single location would probably be much less than 125 days, it is concluded there are no

unacceptable risks to construction workers from exposures to volatile COPCs in shallow groundwater.

4.4.1.2 Based on Soil Gas Measurements

In addition to modeling construction worker exposures using shallow groundwater, potential inhalation exposures were also modeled using measured soil gas data. This exposure scenario was included to evaluate potential exposures in areas where shallow groundwater is not encountered during digging activities (i.e., the depth to groundwater is deeper than 10 feet), but trench air could still be impacted by volatiles derived from soil gas.

Screening-level risk estimates for construction worker exposures to soil gas were derived using VURAM based on the maximum concentration for each volatile COPC across all shallow soil gas samples (i.e., less than 10 feet bgs) and the subslab soil gas samples collected at the VAMC campus buildings. **Attachment H.4** provides the VURAM output and the risk results are summarized in **Table H.4-4**. As shown, cancer risks were below 1E-06 and non-cancer hazards were less than 1 for all COPCs based on a default RME construction worker scenario.

These results are conservative, given that the maximum concentration for four of the seven soil gas COPCs were detected at subslab sample points beneath Building 6 at the VAMC campus (specifically at locations VP04 and VP15). While unlikely, it is acknowledged that occasional intrusive maintenance activities could be required (albeit for a reduced exposure frequency than the default value of 250 days per year).

These soil gas risk estimates indicate that inhalation of volatile COPCs in trench air is unlikely to result in unacceptable risks for construction workers during digging activities in areas with contaminated soil gas.

4.4.2 Hypothetical Future Exposures to Potable Groundwater

Currently, there is no potable use of contaminated groundwater at the site. However, to inform risk management decisions, risk estimates were calculated for a hypothetical scenario in which deep groundwater is used as a potable source in the future. For this scenario, risks were evaluated for a hypothetical residential exposure on a well-by-well basis for the subset of wells that represent deeper groundwater.

Initially, screening-level estimates were determined based on the maximum groundwater concentration for each well. Hypothetical residential exposures were evaluated based on the ingestion of groundwater as drinking water, dermal contact (e.g., during bathing), and inhalation of volatiles derived from use of potable groundwater (e.g., during showering and other home water uses). **Attachment H.5** presents the detailed risk calculations for each well and **Table H.4-5** summarizes the RME risk results. In **Attachment H.5**, hazards/risks are presented separately for each exposure route (ingestion, dermal, and inhalation) and across all exposure routes. The cumulative non-cancer HIs and total cancer risks are presented for two groupings—"Based on Non-Detects Only" and "Based on Detects Only"—to illustrate the contribution of non-detected COPCs to the total exposure. In addition, the risk calculations also summarize hazards/risks for the subset of groundwater COPCs that are expected to be site-related (i.e., PCE, TCE, cis-1,2-DCE) or investigated as potentially site-related (i.e., 1,4-dioxane) to illustrate the portion of the total exposure that is likely to be site-attributable.

In **Table H.4-5**, for each well, RME cumulative non-cancer HIs and total cancer risks are presented across all exposure routes based on the detected COPCs only and based on the site-related COPCs only. In the table, non-cancer HIs greater than 1 and cancer risks greater than 1E-04 are shaded in orange. Cancer risks within EPA's acceptable risk range of 1E-06 to 1E-04 are shaded in green. As shown in **Table H.4-5**, if contaminated groundwater at the site were used as a potable source in the future, estimated RME cancer risks would be within EPA's acceptable risk range of 1E-06 to 1E-04 for all wells, but the estimated RME non-cancer HI would equal or exceed 1 for two wells: MW-03RB and MW-13L. As shown in Figure 3-2 in the RI, MW-03R is located near the VAMC campus on Valdez Drive, and MW-13L is in the ESS neighborhood.

For well MW-13L, no individual chemicals contributed an HQ greater than 1, but PCE was the main contributor to the cumulative HI. The maximum PCE groundwater concentration of 51 µg/L, which was measured during the most recent sampling effort in March 2021, is higher than the drinking water MCL of 5 µg/L for PCE.

For well MW-03RB, PCE was the main HI driver, primarily due to inhalation exposures during domestic water use (e.g., during showering) and ingestion of drinking water. This well was sampled for PCE during seven different sampling events between December 27, 2018, and March 21, 2021. There has been little variability in the reported PCE groundwater concentrations for this well, with values ranging from 170 to 230 µg/L, which shows PCE concentrations are fairly stable and consistently above the drinking water MCL.

These risk estimates show that if contaminated site groundwater were used as a potable source in the future by residents, then unacceptable exposures have the potential to occur because of elevated concentrations of PCE. While deep groundwater is not currently being used for potable use near the site, appropriate mitigation measures should be taken to ensure contaminated groundwater (either deep or shallow) is not used in the future.

4.4.3 Properties with Measured Air Data

In total, indoor air samples with data suitable for quantitative risk evaluation have been collected at 86 residential properties, two schools (0045-S and 0365-S), one church (0366-C), and five VAMC buildings (Buildings 6, 7, 13, 20, and 32). **Table H.4-1** summarizes the number of indoor air samples collected for each property. **Figure H.4-1** illustrates the location of each property (located outside the VAMC campus). For these properties, risks were evaluated on a property-by-property basis.

As described in Section 2.2.4, three devices were employed to measure VOCs in air: in-field HAPSITE, SUMMA canisters, and passive samplers. The number of samples collected by each device type for each property is presented in **Table H.4-1**. There are pros and cons associated with each of these methods, with implications for the HHRA. Section 5.1.1 provides a detailed discussion of the advantages and disadvantages of each method. Initially, screening level risk estimates were determined for each property based on the maximum indoor air concentration across all sampling methods (i.e., HAPSITE, SUMMA, and passive).

Attachment H.6 presents the detailed risk calculations for indoor air, and **Tables H.4-6** through **H.4-10** summarize the RME results for each property from inhalation of indoor air based on the maximum concentrations. In **Attachment H.6**, cumulative hazards/risks are presented for two

groupings—"Based on Non-Detects Only" and "Based on Detects Only"—to illustrate the contribution of non-detected COPCs to the total inhalation exposure. However, in **Tables H.4-6** through **H.4-10,** cumulative non-cancer HIs and cancer risks from inhalation exposures are presented for each property based on detected COPCs only. In addition, hazards/risks are also presented for the subset of indoor air COPCs that are expected to be site-related (i.e., PCE, TCE, VC) or investigated as potentially site-related (i.e., 1,4-dioxane) to illustrate the portion of the total exposure that is likely to be site-attributable.

4.4.3.1 Residential Exposures

Inspection of **Attachment H.6** shows about half of all residential properties have an estimated RME non-cancer HI above 1 and/or cancer risk above 1E-04. However, hazards/risks are biased high because of the contribution of non-detect COPCs with inadequate MDLs. Indeed, usually about 70% of the total exposure for most properties is because of non-detected COPCs. For example, 1,1,2,2-tetrachloroethane, benzyl chloride, 1,1,2-trichloroethane, 1,2-dibromoethane, 1,2,4-trichlorobenzene, bromodichloromethane, bromomethane, and hexachloro-1,3-butadiene are rarely detected in indoor air and achieved MDLs are inadequate relative to the risk-based thresholds. However, none of these COPCs are site-related or expected to be present in indoor air. For this reason, risk estimates based on detected COPCs are likely to provide a more representative assessment of actual exposures and are the focus of the following discussions.

As shown in **Table H.4-6**, when risk estimates are restricted to detected COPCs, 12 residential properties have an RME non-cancer HI greater than 1 (0003-H, 0008-H, 0018-H, 0026-H, 0037-H, 0040-H, 0051-H, 0054-H, 0059-H, 0139-H, 0166-H, and 0197-H), and 3 properties have an RME cancer risk greater than EPA's acceptable risk range of 1E-06 to 1E-04 (0003-H, 0018-H, and 0139-H). However, when risk estimates are restricted to the site-related COPCs, only five properties (0040-H, 0051-H, 0054-H, 0059-H, and 0197-H) have potentially unacceptable exposures, which suggests there are other sources of volatiles present inside many of these residences.

A more refined risk evaluation was performed for each of the 12 properties listed above. The following sections summarize the risk results for each property and describe the indoor air sample characteristics and available groundwater, soil gas, and outdoor ambient air associated with each property to aid in the determination of whether VOCs are related to VI or other potential home sources (e.g., dry-cleaned clothing and adhesives). Detailed results tables for each environmental medium and each property are available in the RI tables (**Table 5-4** for groundwater, **Table 5-11** for soil gas, and **Table 5-12** for indoor and outdoor air[15]). In the following sections, media concentrations are discussed relative to residential screening levels, which are concentration levels that are derived based on a target HQ of 1 and target cancer risk of 1E-06. These screening levels are based on the most recent version (May 2022) of the EPA default residential tap water and indoor air RSLs and the residential groundwater and soil gas VISLs and are presented in **Table H.4-11**.

[15] RI Tables 5-11 and 5-12 include the 2015 HAPSITE results for soil gas and indoor/outdoor air, respectively, that could not be evaluated quantitatively in the risk assessment; these results are not discussed in the by-property evaluations.

Property 0003-H

For property 0003-H, the estimated cumulative RME non-cancer HI was greater than 1 for both residential children and adults (**Table H.4-6**). Although no individual detected COPCs had HQs greater than 1, inspection of **Attachment H.6** shows benzene, m- and p-xylene, and chloroform were the primary contributors to the total hazard. The estimated RME cancer risk was greater than 1E-04, with 1,1,2,2-tetrachloroethane, 1,3-butadiene, 1,2-dichloroethane, benzene, chloroform, ethylbenzene, and PCE having risks greater than 1E-06 (**Table H.4-6**). When restricted to the site-related COPCs, exposures did not result in an unacceptable non-cancer hazard and the cancer risk was within EPA's acceptable range of 1E-06 to 1E-04.

SUMMA sampling performed in April 2015 under ambient conditions (i.e., no pressure cycling performed) showed low-level PCE detections in the basement and bedroom and a residential indoor air RSL exceedance of PCE in the second floor living room, with a maximum concentration of 17 µg/m^3. Several non-site-related COPCs were detected above the residential indoor air RSLs, including 1,1,2,2-tetrachloroethane, benzene, chloroform, and ethylbenzene.

The nearest soil gas sample is collocated at property 0003-H and was sampled via SUMMA canister in April 2015 at 4 feet bgs. None of the COPCs were detected in soil gas above the residential soil gas VISLs. The AOU1 HHRA concluded that the lack of subsurface sources indicated indoor air concentrations of site-related COPCs were not related to VI. However, some of the indoor air risk drivers, including 1,3-butadiene and benzene, were detected in soil gas, albeit at low concentrations.

Subsequent indoor air sampling performed in 2016, 2019, and 2020 show consistent low-level detections of PCE and TCE and a single detection of VC, but concentrations do not exceed their respective residential indoor air RSLs. However, numerous non-site-related COPCs were detected at or above the RSLs. These COPCs include 1,2-dichloroethane, 1,3-butadiene, benzene, carbon tetrachloride, chloroform, and ethylbenzene, which suggests indoor background sources may have been present.

Additional SUMMA sampling was performed in August 2021 (under ambient conditions). None of the COPCs identified as risk contributors for this property (including chloroform, m- and p-xylene, 1,1,2,2-tetrachloroethane, 1,3-butadiene, 1,2-dichloroethane, benzene, ethylbenzene, and PCE) detected during this summer sampling event were above concentrations reported during earlier winter sampling events, suggesting that the risk estimates based upon the maximum historical concentrations provide a conservative estimate of year-round exposure conditions.

Property 0003-H is located on the southern edge of the 5 µg/L isoconcentration contour line of the PCE plume (**Figure H.4-1**). The nearest groundwater sample location to property 0003-H is RG-06/GW-050, approximately 55 feet to the northwest. This piezometer was sampled three times in 2016 and once in April 2021. PCE, TCE, and cis-1,2-DCE were detected in groundwater; however, only TCE had concentrations above the residential groundwater VISL, with a maximum concentration of 7.4 µg/L. No other COPCs were detected in groundwater above the residential groundwater VISL. Notably, none of the indoor air risk drivers were detected in groundwater collected at this well.

A collocated outdoor ambient air sample was collected at Property 0003-H via SUMMA canister in December 2019. PCE and TCE were detected at low concentrations in ambient air at 0.11 µg/m^3 and 0.029 µg/m^3, respectively. Subsequent outdoor ambient air sampling at nearby property 0091-H performed in August 2021 reported similar concentrations of PCE (0.18 µg/m^3). Additional COPCs, including benzene, ethylbenzene, chloroform, and 1,4-dioxane were also detected in 2021. However, outdoor ambient air concentrations for both properties did not result in a cumulative non-cancer HI greater than 1 or cancer risk greater than 1E-06 (Section 4.4.3.5).

The lines of evidence described above indicate that groundwater may be an ongoing source of VI at property 0003-H, but other indoor sources are the primary contributors to total exposures. Despite the VI exposure pathway being potentially complete, there is no unacceptable human health risk for Property 0003-H from site-related COPCs (including PCE and TCE).

Property 0008-H

For Property 0008-H, the estimated cumulative RME non-cancer HI was greater than 1 for both residential children and adults (**Table H.4-6**); benzene and m- and p-xylene were the primary contributors to the total hazard. The estimated RME cancer risk was equal to 1E-04, with benzene and ethylbenzene having risks greater than 1E-06 (**Table H.4-6**). When restricted to the site-related COPCs, exposures did not result in an unacceptable non-cancer hazard and the total cancer risk was within EPA's acceptable range of 1E-06 to 1E-04.

SUMMA sampling performed in April 2015 in the basement (under ambient conditions) showed a low-level detection of PCE but did not identify any site-related COPCs with concentrations above the residential indoor air RSLs. However, several non-site-related COPCs (benzene, ethylbenzene, and m- and p-xylene) were detected above their residential indoor air RSLs.

Property 0008-H is located more than 500 feet east of the 5 µg/L isoconcentration contour line of the PCE plume (**Figure H.4-1**). The nearest groundwater sample location to Property 0008-H is MW-21, approximately 440 feet to the west. This well was screened between 62 and 72 feet bgs and sampled in September and November 2018; March of 2019; June, September, and December of 2020; and March of 2021. Chloroform was consistently detected above the residential groundwater VISL of 0.81 µg/L, at concentrations ranging from a minimum of 1.9 µg/L in June 2020, to a maximum concentration of 2.7 µg/L in December 2020. The only other consistently detected COPC was PCE, although concentrations were below the residential groundwater VISL of 15 µg/L. PCE concentrations ranged from a minimum of 1.1 µg/L in December 2020 to a maximum concentration of 2 µg/L in March 2019 and June 2020.

The nearest soil gas sample is collocated at Property 0008-H and was sampled via SUMMA canister in April 2015 at 4 feet bgs. PCE was detected in one sample at a concentration below the residential soil gas VISL. Chloroform was the only COPC detected in soil gas above the VISL; however, numerous other volatile chemicals were detected, including some of the indoor air risk drivers (e.g., benzene, m- and p-xylene, and ethylbenzene), albeit at low concentrations.

The nearest outdoor ambient air sample was collected at Property 0062-H, which is approximately 1,800 feet west from Property 0008-H and is likely too far to provide meaningful information on local ambient air concentrations.

The lines of evidence described above indicate that soil gas represents an ongoing source of VI at Property 0008-H, but the primary COPCs do not appear to be related to the PCE plume and were not detected in groundwater. Despite the VI exposure pathway potentially being complete, there is no unacceptable human health risk for Property 0008-H from site-related COPCs (including PCE and TCE).

Property 0018-H

For Property 0018-H, the estimated cumulative RME non-cancer HI was greater than 1 for both residential children and adults (**Table H.4-6**); 1,2,4-trichlorobenzene, naphthalene, and benzyl chloride were the primary contributors to the total hazard. The estimated RME cancer risk was greater than 1E-04, and exposures are primarily attributable to naphthalene, with contributions of 1,1,2,2-tetrachloroethane, 1,3-butadiene, 1,2-dibromoethane, 1,2-dichloroethane, 1,4-dichlorobenzene, benzene, benzyl chloride, bromodichloromethane, chloroform, ethylbenzene, hexachloro-1,3-butadiene, and TCE (**Table H.4-6**). When restricted to the site-related COPCs, exposures did not result in an unacceptable non-cancer hazard and the total cancer risk was within EPA's acceptable range of 1E-06 to 1E-04.

SUMMA sampling performed in March 2016 (under ambient conditions) showed elevated concentrations of PCE, TCE, and benzene in the basement living room, with maximum concentrations of 12 µg/m^3, 0.83 µg/m^3, and 1.5 µg/m^3, respectively. Subsequent sampling in December 2019 and January 2020 showed consistent detections of PCE, as well as a detection of TCE and cis-1,2-DCE. Highest indoor air concentrations were reported for the living room and workout room in the basement and included detections of PCE and TCE above the residential indoor air RSLs. Numerous other non-site-related COPCs were detected above the residential indoor air RSLs during the 2020 sampling event, including 1,1,2,2-tetrachloroethane, 1,2,4-trichlorobenzene, 1,2-dibromoethane, 1,2-dichlorethane, 1,3-butadiene, 1,4-dichlrobenzene, benzene, chloroform, ethylbenzene, hexachloro-1,3-butadiene, and naphthalene. Most COPCs at this property were detected in the basement workout room. Despite the fact that site-related PCE and TCE exceed the indoor air RSLs, these analytes contribute approximately 10% to the total non-cancer hazard estimates and 2% to the total cancer risk estimates (based upon the maximum indoor air concentrations).

Additional SUMMA sampling performed in August 2021 (under ambient conditions) showed similar concentrations of the majority of the COPCs identified during previous sample events. With the exception of chloroform and bromodichloromethane (neither of which are expected to be site related), none of the main risk drivers for this property were detected during this summer sampling event at concentrations higher than were reported during earlier winter sampling events.

Property 0018-H is located within the 5 µg/L isoconcentration contour line of the PCE plume and approximately 100 feet from the 50 µg/L isoconcentration contour line (**Figure H.4-1**). The nearest groundwater sample location to Property 0018-H is GW-009, approximately 60 feet to the east. This well was screened between 5 and 10 feet bgs, and samples were collected in February of 2016. PCE, TCE, and cis-1,2-DCE were the only chemicals detected at the location; only TCE was detected above the residential groundwater VISLs.

The nearest monitoring well location to Property 0018-H is MW-14S and MW-14D, approximately 80 feet to the south. This well was screened between 4.5 and 14.5 feet bgs for the shallow-screened interval (MW-14S) and between 49 and 54 feet bgs for the deep-screened interval (MW-14D). Samples were collected from these wells in September and December 2018; March and December of 2019; June, September, and December of 2020; and March of 2021. In the deep interval, chloroform and PCE were consistently detected above the residential groundwater VISLs. In the shallow interval, chloroform and TCE were frequently detected above the residential groundwater VISLs. Interestingly, higher concentrations of PCE were measured in the deeper groundwater interval and higher concentrations of TCE were measured in the shallow groundwater interval.

The nearest soil gas sample location is collocated at Property 0018-H, and was sampled via HAPSITE in February 2015. Only PCE and cis-1,2-DCE were detected. PCE was detected at a maximum concentration of 47 µg/m^3, which is below the residential soil gas VISL of 360 µg/m^3. However, subsequent soil gas sampling undertaken in the area at RG-08 in April and August 2021 identified benzene, chloroform, PCE, and TCE at concentrations above the residential soil gas VISLs. The maximum PCE concentration at RG-08 was observed in August 2021 at 4,400 µg/m^3.

The nearest outdoor ambient air sample was collected at Property 0037-H, approximately 85 feet west. Ambient air was sampled via SUMMA canister in January 2020, and several VOCs were detected, including PCE, TCE, 1,3-butadiene, benzene, and chloroform. Ambient air concentrations did not result in a cumulative non-cancer HQ greater than 1 or a cancer risk greater than 2E-06 (Section 4.4.3.5). Subsequent outdoor ambient air sampling performed at nearby Property 0011-H in August 2021 reported a similar profile of VOCs, resulting in comparable risk estimates to those reported for 0037-H.

The lines of evidence described above indicate that groundwater represents an ongoing source of VI at Property 0018-H, but the primary COPCs in indoor air do not appear to be related to the PCE plume. However, despite this exposure pathway being complete, there is no unacceptable human health risk to Property 0018H from site-related COPCs (including PCE and TCE).

Property 0026-H

For Property 0026-H, the estimated cumulative RME non-cancer HI was greater than 1 for both residential children and adults (**Table H.4-6**); 1,1,2-trichloroethane was the primary contributor to the total hazard. The estimated RME cancer risk was greater than 1E-05, with 1,1,2-trichloroethane, 1,2-dichloroethane, benzene, bromodichloromethane, chloroform, and ethylbenzene having risks greater than 1E-06 (**Table H.4-6**). When restricted to the site-related COPCs, exposures did not result in an unacceptable non-cancer hazard and the total cancer risk was within EPA's acceptable range of 1E-06 to 1E-04.

In April 2015, SUMMA sampling performed in the pantry showed detections of several VOCs in indoor air, including a low-level detection of PCE. Subsequent SUMMA sampling and HAPSITE testing performed in March 2017 (under ambient conditions) showed low-level PCE detections throughout the home but did not detect any site-related COPCs above the residential indoor air RSLs. However, several non-site-related COPCs, including 1,1,2-trichloroethane, 1,2-dichloroethane, benzene, chloroform, and ethylbenzene, were detected above the residential indoor air RSLs.

Indoor air sampling conducted in 2020 showed consistent detections of several VOCs in both SUMMA and passive samples, including both PCE and TCE. An isolated exceedance of the residential indoor air RSL for PCE was reported in the laundry chute. Despite this exceedance, PCE contributed less than approximately 10% to the total non-cancer risk estimates at the property.

Additional SUMMA sampling performed in August 2021 (under ambient conditions) showed similar concentrations to those reported during previous sampling events. None of the six risk drivers identified at this property (1,1,2-trichloroethane, 1,2-dichloroethane, benzene, bromodichloromethane, chloroform, and ethylbenzene) were detected in this summer sampling event above concentrations reported during earlier winter sampling events, suggesting that the risk estimates based upon the maximum historical concentrations provide a conservative estimate of year-round exposure conditions.

Property 0026-H is located on the northwest edge of the 5 µg/L isoconcentration contour line of the PCE plume (**Figure H.4-1**). The nearest groundwater sample location to Property 0026-H is RG-04/GW-020, approximately 80 feet to the north. This well was screened between 10 and 20 feet bgs and sampled three times in 2016 and once in April 2021. Chloroform, PCE, and TCE were detected in groundwater, and chloroform concentrations were above the residential groundwater VISL. Notably, with the exception of chloroform, none of the indoor air risk drivers were detected in groundwater collected at this well, suggesting an indoor air source(s) of the other COPCs.

The nearest soil gas sample was collocated at Property 0026-H and was sampled via SUMMA canister in April 2015 at 4 feet bgs. Some of the indoor air risk drivers, including benzene, chloroform, and ethylbenzene, were detected in soil gas, albeit at concentrations below the residential soil gas VISLs. Subsequent soil gas sampling undertaken at RG-04 detected PCE and TCE in April and August 2021 at concentrations less than the residential soil gas VISLs. Only chloroform was detected in August 2021 at concentrations above the residential soil gas VISLs.

Collocated outdoor ambient air samples were collected at Property 0026-H via SUMMA canister April 2015 and March 2020, with HAPSITE testing conducted in March 2017. Benzene, chloroform, 1,2-dichloroethane, and ethylbenzene were detected in outdoor air. Ambient air concentrations did not result in a cumulative non-cancer HI greater than 1 or cancer risk greater than 1E-06 (Section 4.4.3.5).

The lines of evidence described above indicate that groundwater may be an ongoing source of VI at Property 0026-H, but other indoor sources are the primary contributors to total exposures. Despite the VI exposure pathway being potentially complete, there is no unacceptable human health risk for Property 0026-H from site-related COPCs (including PCE and TCE).

Property 0037-H

For Property 0037-H, the estimated cumulative RME non-cancer HI was greater than 1 for both residential children and adults (**Table H.4-6**); 1,2-dichloroethane was the primary contributor to the total hazard. The estimated RME cancer risk was equal to 1E-04, with 1,1,2,2-tetrachloroethane, 1,3-butadiene, 1,4-dioxane, 1,2-dichloroethane, benzene, bromodichloromethane, chloroform, and ethylbenzene having risks greater than 1E-06 (**Table H.4-6**). When restricted to the

site-related COPCs, exposures did not result in an unacceptable non-cancer hazard and the total cancer risk was within EPA's acceptable range of 1E-06 to 1E-04.

HAPSITE testing performed at Property 0037-H in 2015 showed frequent detections of PCE in several basement rooms, with a maximum greater than the Tier 1 RAL in the furnace room at floor level near a crack (88 µg/m^3). HAPSITE testing during pressure cycling showed higher PCE concentrations under negative pressure and lower concentrations during positive pressure, which indicated VI was occurring. As discussed in Section 2.2.6, the 2015 HAPSITE data were qualified and not suitable for quantitative analysis in the risk assessment but are discussed here to provide historical context for this property.

SUMMA sampling performed in March 2016 in the basement laundry room showed detections of several VOCs in indoor air, including a low-level detection of PCE. The basement floor cracks were sealed in late 2016. Subsequent HAPSITE testing performed in December 2019 and SUMMA and passive sampling performed in January 2020 showed low-level PCE detections throughout the home, at concentrations slightly above the above the residential indoor air RSLs in the basement, basement bedroom, basement utility room, and living room. In addition, several non-site-related COPCs, including 1,1,2,2-tetrachloroethane, 1,2-dichloroethane, 1,3-butadiene, benzene, and chloroform, were detected above the residential indoor air RSLs.

Additional SUMMA sampling performed in August 2021 (under ambient conditions) showed generally similar concentrations of the main risk drivers to levels reported during previous sampling events. During this summer sampling event, 1,1,2-trichloroethane, 1,3-butadiene, and PCE were detected at lower concentrations in August 2021 than in previous sample events; however, 1,2-dichloroethane, benzene, and chloroform were detected at concentrations higher than reported during earlier winter sampling events. In addition, 1,4-dioxane, bromodichloromethane, carbon tetrachloride, and ethylbenzene were detected in August 2021 at concentrations above the residential indoor air RSLs.

Property 0037-H is located within the 5 µg/L isoconcentration contour line of the PCE plume and approximately 125 feet from the 50 µg/L isoconcentration contour line (**Figure H.4-1**). The nearest groundwater sample location to Property 0037-H is GW-009, approximately 70 feet to the east. This well was screened between 5 and 10 feet bgs, and samples were collected in February of 2016. PCE, TCE, and cis-1,2-DCE were detected in groundwater at the location; only TCE was detected above the residential groundwater VISL. The nearest monitoring well location to Property 0037-H is MW-14S and MW-14D, approximately 80 feet to the east. As discussed for Property 0018H, this well was screened between 4.5 and 14.5 feet bgs for the shallow-screened interval (MW-14S) and between 49 and 54 feet bgs for the deep-screened interval (MW-14D). Samples were collected from these wells in September and December 2018; March and December of 2019; June, September, and December of 2020; and March of 2021. In the deep interval, chloroform and PCE were consistently detected above the residential groundwater VISLs. In the shallow interval, chloroform and TCE were frequently detected above the residential groundwater VISLs. Interestingly, higher concentrations of PCE were measured in the deeper groundwater interval and higher concentrations of TCE were measured in the shallow groundwater interval.

The nearest soil gas sample location is collocated at Property 0037-H. HAPSITE testing was performed in April 2015 at 4 ft bgs. Only PCE was detected at a maximum concentration of 2.2 µg/m^3, which is well below the residential soil gas VISL of 360 µg/m^3. However, the 2015 HAPSITE data were qualified and not suitable for quantitative analysis in the risk assessment but are discussed here to provide historical context for this property.

Property 0037-H is approximately equidistant between RG-01 and RG-08, which were subsequently sampled for soil gas in April and August 2021. Benzene (April only), chloroform, PCE, and TCE were detected at concentrations above the residential soil gas VISLs at RG-08 in April and August 2021, and PCE and chloroform were detected in excess of the residential soil gas VISLs at RG-01 in August 2021. The maximum PCE concentration was observed in August 2021 at 4,400 µg/m^3.

The nearest outdoor ambient air sample was collocated at Property 0037-H. Ambient air was sampled via SUMMA canister in January 2020, and several VOCs were detected, including PCE, TCE, 1,3-butadiene, benzene, and chloroform. Ambient air concentrations did not result in a cumulative non-cancer HQ greater than 1 or a cancer risk greater than 2E-06 (Section 4.4.3.5). Subsequent outdoor ambient air sampling performed nearby at Property 0102-H in August 2021 did not report detectable levels of PCE or TCE.

The lines of evidence described above indicate that groundwater represents an ongoing source of VI at Property 0037-H, but the primary COPCs in indoor air do not appear to be related to the PCE plume. However, despite this exposure pathway being complete, based on current conditions (i.e., after basement floor cracks have been sealed), there is no unacceptable human health risk to Property 0037H from site-related COPCs (i.e., PCE and TCE) or 1,4-dioxane.

Property 0040-H

Recall that Property 0040-H was identified in the early AOU1 investigation as having indoor air concentrations of PCE and TCE at concentrations greater than the established Tier 1 RAL and required interim actions (VA 2016). As discussed in Section 2.4 of the RI, a vapor intrusion mitigation system (VIMS) (a whole-house air purifier) was installed in November 2016; however, noise complaints from the homeowner about the VIMS precluded consistent use of the system. As such, for the purposes of the risk assessment, only historical 2016 data predating the installation of the VIMS were considered herein to approximate a worst-case exposure scenario.

For Property 0040-H, the estimated cumulative RME non-cancer HI was greater than 1 for both residential children and adults (**Table H.4-6**); PCE and TCE were the primary contributors to the total hazard. Each of these COPCs acts on a different target organ (e.g., PCE targets the nervous/ocular system, while TCE targets the heart/immune system); thus, non-cancer hazards would not be additive but HQs for each risk driver would still be greater than 1. The estimated RME cancer risk was equal to 1E-04, with the primary risk drivers being TCE and chloroform; however, 1,3-butadiene, PCE, benzene, ethylbenzene, and methylene chloride also had cancer risk estimates above 1E-06 (**Table H.4-6**).

Initial HAPSITE testing performed in early March 2016 at Property 0040-H (under ambient conditions) showed frequent detections of PCE, including three locations above the residential indoor air Tier 1 RAL of 41 µg/m^3—the basement bedroom at 52 µg/m^3, the living room at

43 µg/m^3, and the laundry room at 153 µg/m^3. TCE concentrations were also frequently in exceedance of the Tier 1 RAL of 2.1 µg/m^3. HAPSITE testing during pressure cycling showed higher PCE and TCE concentrations under negative pressure and lower (or non-detect) concentrations during positive pressure. Subsequent SUMMA canister sampling was undertaken later in March 2016 (under ambient conditions) to confirm the HAPSITE results, and both locations reported PCE and TCE concentrations above the residential indoor air Tier 1 RAL (i.e., the basement bedroom and the kitchen).

In addition to PCE and TCE, other COPCs were detected in indoor air at the property above the residential indoor air RSLs, including 1,3-butadiene, benzene, chloroform, ethylbenzene, methylene chloride; however, PCE and TCE were the main non-cancer hazard drivers.

Property 0040-H is located within the 5 µg/L isoconcentration contour line of the PCE plume and approximately 100 feet from the 50 µg/L isoconcentration contour line (**Figure H.4-1**). Property 0040-H is next to Property 0018-H, which was discussed above. The nearest groundwater sample location to Property 0040-H is MW-14S and MW-14D, approximately 75 feet to the west. As discussed previously for Property 0018-H, this well was screened between 4.5 and 14.5 feet bgs for the shallow screened interval (MW-14S) and between 49 and 54 feet bgs for the deep screened interval (MW-14D). Samples were collected from these wells in 2018, 2019, 2020, and 2021. In the deep interval, chloroform and PCE were consistently detected above the residential groundwater VISLs. In the shallow interval, chloroform and TCE were frequently detected above the residential groundwater VISLs. For this well, higher concentrations of PCE were reported in the deeper groundwater interval and higher concentrations of TCE in the shallow groundwater interval. Groundwater contamination of PCE, TCE, and chloroform suggests VI is occurring at Property 0040-H, but only PCE and TCE are expected to be site related.

The nearest soil gas sample location is collocated at Property 0040-H. HAPSITE testing was performed in March 2016 at 4 and 6 feet bgs. Only PCE was detected at a maximum concentration of 4.6 µg/m^3, which is well below the residential soil gas VISL. As noted above, the highest indoor air concentrations of PCE were reported in the laundry room. The AOU1 RI documented that several homes within the ESS have sumps and basement moisture issues. Thus, measurements of nearby soil gas may not account for water intrusion and subsequent vaporization. No additional soil gas sampling is recommended for this property because it is clear from the indoor air and groundwater results that VI is occurring.

The nearest outdoor ambient air sample was collocated at Property 0040-H. Ambient air was sampled via HAPSITE in March 2016; PCE, TCE, and cis-1,2-DCE were not detected.

The lines of evidence described above indicate that groundwater represents an ongoing source of VI at Property 0040-H and that indoor air may result in unacceptable human health risk.

As noted above, because of the exceedances of the Tier 1 RAL inside Property 0040-H, a VIMS was installed at this property in November 2016. Because of noise complaints from the homeowner, this system was removed in 2021 and portable air purifying units were re-installed in the residence to reduce indoor air PCE concentrations. Additional indoor air sampling at this property was performed in 2021 and 2022, and these data continue to show elevated PCE and TCE inside this property when the air purifying units are turned off. Additional remedial actions

have been recommended in the RI. Section 2.4 in the RI contains additional information about actions that have been taken at this property to mitigate human health exposures to PCE and other site-related COPCs.

Property 0051-H

For Property 0051-H, the estimated cumulative RME non-cancer HI was greater than 1 for both residential children and adults (**Table H.4-6**); PCE and (to a lesser extent) isopropyl alcohol were the primary contributors to the total hazard. Each of these COPCs acts on a different target organ (e.g., PCE targets the nervous/ocular system, while isopropyl alcohol can affect testes weight); thus, non-cancer hazards would not be additive. Even so, HQs for each risk driver would still be greater than 1. The estimated RME cancer risk was greater than 1E-05, with PCE, benzene, bromodichloromethane, and chloroform having risks greater than 1E-06 (**Table H.4-6**).

Initial HAPSITE testing performed in February 2016 for Property 0051-H showed frequent detections of PCE, including a maximum concentration of 402 µg/m^3 (under negative pressure conditions) near a floor crack in the mechanical room. HAPSITE testing during pressure cycling showed higher PCE concentrations under negative pressure and lower (or non-detect) concentrations during positive pressure. The basement floor cracks were sealed in late 2016.

Subsequent SUMMA canister and passive sampling performed in 2020 (under ambient conditions) showed PCE concentrations in the home were much lower than levels reported in 2016 (in 2020, the highest PCE concentration of 3.7 µg/m^3 was reported in the basement laundry room). However, additional non-site-related COPCs were detected at or above the residential indoor air RSLs, including 1,2-dichloroethane, benzene, carbon tetrachloride, chloroform, and naphthalene.

Additional SUMMA sampling performed in August 2021 (under ambient conditions showed similar concentrations of PCE and benzene, as identified during previous sampling events. However, chloroform was detected at slightly higher concentrations than was observed in earlier events. In addition, isopropyl alcohol and bromodichloromethane were identified as property-specific risk drivers (based upon the results of the August 2021 sampling event). Chloroform, isopropyl alcohol, and bromodichloromethane are not expected to be site-related chemicals. If the HAPSITE results collected in 2016 (prior to sealing the cracks) were excluded, and risks were based on the subsequent SUMMA and passive sampling results, the non-cancer HI would be less than 1 and the total cancer risk would be within EPA's acceptable range of 1E-06 to 1E-04.

Property 0051-H is located on the southern edge of the 5 µg/L isoconcentration contour line of the PCE plume (**Figure H.4-1**). The nearest groundwater sample location to Property 0051-H is GW-004, approximately 65 feet to the west. This well was screened between 20 and 25 feet bgs, and samples were collected in February of 2016. PCE, TCE, and chloroform were the only COPCs detected at the location; only chloroform was detected above the residential groundwater VISL. The nearest monitoring well location to Property 0051-H is RG-10/GW-061, approximately 130 feet to the southwest. This piezometer was sampled three times in 2016 and once in April 2021. Chloroform concentrations were detected above the residential groundwater VISL. PCE and TCE were consistently detected in this well; however, the detected concentrations do not exceed the residential groundwater VISLs.

The nearest soil gas sample is collocated at Property 0051-H. HAPSITE testing was performed in February 2016 at depths ranging from 4.5 to 8.5 feet bgs. The maximum soil gas concentrations for these three COPCs did not exceed the residential soil gas VISLs.

Collocated outdoor air samples were collected at Property 0051-H via HAPSITE in February 2016. The maximum outdoor air PCE concentration in 2016 was 76 µg/m^3; however, this sample was collected at a spring that daylights on the property and is not representative of outdoor ambient air. The ambient air sample collected with this spring air sample was non-detect for PCE (<0.7 µg/m^3). Subsequent SUMMA sampling of ambient air performed for this property in March 2020 and August 2021 showed detected concentrations of PCE in ambient air of 0.2 µg/m^3 and 0.13 µg/m^3, respectively; several other VOCs were also detected. Ambient air concentrations did not result in a cumulative non-cancer HI greater than 1 or cancer risk greater than 1E-06 (Section 4.4.3.5).

The lines of evidence described above indicate that groundwater represents an ongoing source of VI at Property 0051-H. However, despite this exposure pathway being complete, based on current conditions (i.e., after basement floor cracks have been sealed), there is no unacceptable human health risk to Property 0051-H from site-related COPCs (including PCE and TCE).

Property 0054-H

For Property 0054-H, the estimated cumulative RME non-cancer HI was greater than 1 for both residential children and adults (**Table H.4-6**); TCE was the primary contributor to the total hazard. The estimated RME cancer risk was greater than 1E-05, with PCE and TCE having risks greater than 1E-06 (**Table H.4-6**).

HAPSITE testing performed in May 2016 for Property 0054-H showed frequent detections of PCE and TCE. The maximum PCE concentration of 21 µg/m^3 and the maximum TCE concentration of 9.3 µg/m^3 were both identified in the basement shop room (under negative pressure conditions).

As explained in the AOU1 HHRA, interior sources were located following this initial sampling and decreases in concentration were noted after the majority of these items were removed. Pressure control testing was conducted. Indoor air TCE concentrations in the shop room decreased during depressurization and remained steady during pressurization. Indoor air PCE concentrations in the shop room increased during depressurization and were non-detect by end of pressurization. Subsequent HAPSITE testing performed in June 2016 resulted in an overall reduction in concentrations of both TCE and PCE in most rooms.

Property 0054-H is located within the 5 µg/L isoconcentration contour line of the PCE plume and on the edge the 50 µg/L isoconcentration contour line (**Figure H.4-1**). Property 0054-H is next to Property 0018-H and Property 0040-H, which were discussed above. The nearest groundwater sample location to Property 0054-H is RG-08/GW-053, approximately 70 feet to the northeast. This piezometer was screened between 8 and 18 feet bgs and sampled three times in 2016 and once in April 2021. Concentrations of chloroform and PCE were detected above their residential groundwater VISLs; TCE was also detected but at concentrations below the residential groundwater VISL.

The nearest soil gas samples were collocated at Property 0054-H. HAPSITE testing was performed in June 2016 at 7 feet bgs. Only PCE was detected (with a maximum concentration of 61 µg/m^3); however, this concentration does not exceed the residential soil gas VISL.

HAPSITE testing was performed for collocated outdoor ambient air samples at Property 0054-H in May and June 2016. No COPCs were detected in ambient air.

The lines of evidence described above indicate that indoor sources were the primary contributors to overall exposures at Property 0054-H, and the VI pathway is not likely to be complete.

Property 0059-H

For Property 0059-H, the estimated cumulative RME non-cancer HI was greater than 1 for both residential children and adults (**Table H.4-6**); TCE, PCE, and 1,2,4-trichlorobenzene were the primary contributors to the total hazard. Each of these COPCs acts on a different target organ; thus, non-cancer hazards would not be additive, but HQs for each risk driver would still be greater than 1. The estimated RME cancer risk was equal to 1E-04, with PCE, TCE, 1,3-butadiene, 1,4-dioxane, 1,2-dichloropropane, benzene, bromodichloromethane, carbon tetrachloride, chloroform, and hexachloro-1,3-butadiene having risks greater than 1E-06 (**Table H.4-6**).

HAPSITE testing performed for Property 0059-H in March 2017 showed two exceedances of PCE—at the blower door with a maximum concentration of 12 µg/m^3 and at the basement laundry room floor drain with a maximum concentration of 220 µg/m^3. This floor drain sample was collected approximately 2 inches above the floor drain during pressure cycling as vapors entered the basement laundry floor drain during induced negative pressure. TCE was also detected at a maximum concentration of 12 µg/m^3 at the basement laundry room floor drain, suggesting a preferential pathway for VI. During this sampling event, the p-trap was observed to be dry, so water was added, and the room was re-tested. Under positive pressure, PCE and TCE were non-detect in all samples.

Subsequent indoor air sampling conducted using SUMMA and passive samplers at this property in 2020 (under ambient conditions) did not detect PCE or TCE above the residential indoor air RSL; however, 1,4-dioxane was detected in two locations above the residential indoor air RSL—in the basement workout room (0.59 µg/m^3) and in the utility closet (4.7 µg/m^3). In addition, other non-site-related COPCs, including 1,2,4-trichlorobenzene, 1,3-butadiene, benzene, carbon tetrachloride, chloroform, hexachloro-1,3-butadiene, and naphthalene, were also detected above the residential indoor air RSLs.

Additional SUMMA sampling performed in August 2021 (under ambient conditions) showed similar concentrations of the majority of the COPCs identified above during previous sample events. Five of the eight previously identified risk drivers at this property (1,2,4-trichlorobenzene, 1,4-dioxane, hexachloro-1,3-butadiene, PCE, and TCE), were detected during this summer sampling event at concentrations lower than those reported during earlier winter sample events; however, 1,3-butadiene, benzene and chloroform, were detected at higher concentrations compared during previous sampling events. Additionally, 1,2-dichloropropane, bromodichloromethane, and carbon tetrachloride were detected in August 2021 for the first time at this property at concentrations above the residential indoor air RSLs.

Indoor air samples collected within inches of the floor drain would not be representative of a long-term exposure scenario or air within a residential breathing zone. If risk estimates were based on the more recent SUMMA and passive samples only (**Attachment H.7**), the cumulative non-cancer HI based on the site-related COPCs would be less than 1 and the total cancer risk would be within or below EPA's acceptable risk range.

Property 0059-H is located on the southwest edge of the 5 µg/L isoconcentration contour line of the PCE plume (**Figure H.4-1**). The nearest groundwater sample location to Property 0051-H is GW-004, approximately 260 feet to the southeast. This well was screened between 20 and 25 ft bgs, and samples were collected in February of 2016. PCE, TCE, and chloroform were the only COPCs detected at the location; only chloroform was detected above the residential groundwater VISL. The nearest monitoring well location to Property 0059-H is RG-10/GW-061, approximately 370 feet to the southeast. This piezometer was sampled three times in 2016 and once in April 2021. Chloroform concentrations were detected above the residential groundwater VISL. PCE and TCE were consistently detected in this well; however, the detected concentrations do not exceed the residential groundwater VISLs. 1,4-dioxane was not detected in groundwater during the 2016 sampling events.

The nearest soil gas sample is collocated at property 0059-H. HAPSITE testing was performed in March 2017 at 1.8 and 5 feet bgs. None of the three COPCs were detected in soil gas.

Collocated outdoor ambient air samples were collected at Property 0059-H via HAPSITE in March 2017, and via SUMMA canisters in January 2020. PCE, TCE, and cis-1,2-DCE were not detected during the HAPSITE testing in 2017. Subsequent SUMMA sampling in 2020 detected low concentrations of PCE in ambient air at 0.35 µg/m^3; several other VOCs were also detected, including benzene. Ambient air concentrations did not result in a cumulative non-cancer HI greater than 1 or cancer risk greater than 1E-06 (Section 4.4.3.5). Subsequent outdoor ambient air sampling performed nearby at Property 0102-H in August 2021 did not report detectable levels of PCE.

The lines of evidence described above indicate that groundwater represents an ongoing source of VI at Property 0059-H. Based upon the most recent indoor air sampling results, despite this exposure pathway being complete, there is no unacceptable human health risk to Property 0059-H from site-related COPCs (i.e., PCE and TCE) or 1,4-dioxane.

Property 0139-H

For Property 0139-H, the estimated cumulative RME non-cancer HI was greater than 1 for both residential children and adults (**Table H.4-6**); isopropyl alcohol (which is not site related) was the primary contributor to the total hazard. The estimated RME cancer risk was greater than 1E-04, with 1,3-butadiene, 1,2-dichloroethane, benzene, and chloroform having risks greater than 1E-06 (none of which are site related) (**Table H.4-6**). When restricted to the site-related COPCs, exposures did not result in an unacceptable non-cancer hazard and the total cancer risk was within EPA's acceptable range of 1E-06 to 1E-04.

SUMMA canister and passive sampling was performed for Property 0139-H (under ambient conditions) in March 2020. No site-related COPCs were detected in indoor air above the residential indoor air RSLs. Low levels of PCE were detected at the property (below 0.2 µg/m^3),

but TCE, cis-1,2-DCE, and VC were not. However, several non-site-related COPCs were detected above their residential indoor air RSLs—including 1,2-dichloroethane; 1,3-butadiene; 1,4-dichlorobenzene; benzene; chloroform; and isopropyl alcohol. The presence of multiple non-site-related COPCs contributing to unacceptable exposures suggests there may be interior sources of volatiles present inside the property.

Property 0139-H is located within the 5 µg/L isoconcentration contour line of the PCE plume and approximately 200 feet from the 50 µg/L isoconcentration contour line (**Figure H.4-1**). The nearest groundwater sample location to Property 0139-H is RG-07/GW-052, approximately 130 feet to the west. This well was screened between 20 and 30 feet bgs and sampled three times in 2016 and once in April 2021. Chloroform and PCE were detected above their respective residential groundwater VISL. TCE was also detected in this well, but at concentrations below the residential groundwater VISL. Notably, none of the indoor air risk drivers other than chloroform were detected in groundwater collected at this well, which further suggests an indoor air source(s) of the other COPCs.

The nearest soil gas samples were collected from Property 0062-H, approximately 60 feet to the southeast. HAPSITE testing was performed in March 2017 at 6.5 feet bgs. PCE, TCE, and cis-1,2-DCE were not detected in soil gas.

A collocated outdoor ambient air sample was collected at Property 0139-H via SUMMA canister in March 2020. Benzene, chloroform, and 1,2-dichloroethane were the only COPCs detected in outdoor air. Ambient air concentrations did not result in a cumulative non-cancer HI greater than 1 or cancer risk greater than 1E-06 (Section 4.4.3.5).

The lines of evidence described above indicate that groundwater may be the source of PCE and chloroform VI at Property 0139-H. However, other non-site-related indoor sources appear to be present and are the most important contributors to unacceptable exposures. If exposures are restricted to site-related COPCs, then there is no unacceptable human health risk at Property 0139-H.

Property 0166-H

For Property 0166-H, the estimated cumulative RME non-cancer HI was greater than 1 for both residential children and adults (**Table H.4-6**); isopropyl alcohol (which is not site related) was the primary contributor to the total hazard. The estimated RME cancer risk was greater than 1E-05, with benzene, chloroform, and TCE having risks greater than 1E-06 (**Table H.4-6**). When restricted to the site-related COPCs, exposures did not result in an unacceptable non-cancer hazard and the total cancer risk was within EPA's acceptable range of 1E-06 to 1E-04.

Sampling performed in March 2020 for Property 0166-H (under ambient conditions) shows detected concentrations of PCE, TCE, and cis-1,2-DCE in the basement crawl space (based on both SUMMA and passive sampling methods); TCE concentrations were above the residential indoor air RSL. TCE and PCE were also detected in the living room, albeit at concentrations below the residential indoor air RSL. These results indicate VI is occurring at this property. Non-site-related COPCs were also detected at or above their respective residential indoor air RSLs, including 1,2-dichloroethane, benzene, carbon tetrachloride, chloroform, and isopropyl alcohol.

Additional SUMMA sampling performed in August 2021 (under ambient conditions) showed similar concentrations of the COPCs identified above during previous sampling events. None of the four risk drivers identified at this property (isopropyl alcohol, benzene, chloroform, and TCE) were detected during this summer sampling event above concentrations reported during earlier winter sampling events, suggesting that the risk estimates based upon the maximum historical concentrations provide a conservative estimate of year-round exposure conditions.

Property 0166-H is located within the 50 µg/L isoconcentration contour line of the PCE plume (**Figure H.4-1**). The nearest groundwater sample location to Property 0166-H is RG-02/GW-011, approximately 100 feet to the southeast. This well was sampled three times in 2016 and once in April 2021. PCE, TCE, and cis-1,2-DCE have been consistently detected in all samples from this well. Chloroform, PCE, and TCE were detected above their respective residential groundwater VISL. Notably, benzene was not detected in groundwater collected at this well, suggesting an indoor air source(s) of this COPC.

The nearest soil gas sample was collected from Property 0002-H, approximately 45 feet to the west. HAPSITE testing was performed in February 2015 at 4 and 8 feet bgs. PCE was detected at both depths in soil gas, but at concentrations far below the residential soil gas VISL. These 2015 HAPSITE data were qualified and not suitable for quantitative analysis in the risk assessment but are discussed here to provide additional information for this property. In March 2017, a soil gas sample was collected from Property 0050-H, approximately 60 feet to the southeast. PCE and TCE were detected at 5 feet bgs, but concentrations were not above the residential soil gas VISL.

The nearest outdoor ambient air sample was collected at Property 0173-H, approximately 200 feet to the east. Ambient air was sampled via SUMMA canisters in March 2020. Benzene and chloroform were detected in outdoor ambient air. Ambient air concentrations did not result in a cumulative non-cancer HI greater than 1 or cancer risk greater than 1E-06 (Section 4.4.3.5). Subsequent sampling performed nearby at Property 0011-H in August 2021 and at Property 0064-H in March 2022 reported additional VOCs in outdoor ambient air. At these locations, the non-cancer HI was well below 1 and the cumulative cancer risk was 3E-06 (Section 4.4.3.5).

The lines of evidence described above indicate that groundwater likely represents an ongoing source of VI at Property 0166-H. However, other non-site-related indoor sources are also contributing to total exposures. Despite the VI pathway being complete, there is no unacceptable human health risk to Property 0166H from site-related COPCs (including PCE and TCE).

Property 0197-H

For Property 0197-H, the estimated cumulative RME non-cancer HI was greater than 1 for both residential children and adults (**Table H.4-6**); TCE was the primary contributor to the total hazard. The estimated RME cancer risk was greater than 1E-05, which is within EPA's acceptable risk range of 1E-06 to 1E-04, with chloroform, PCE, and TCE having risks greater than 1E-06 (**Table H.4-6**).

Sampling performed in March 2022 for Property 0197-H (under ambient conditions) shows detected concentrations of PCE and TCE in the basement laundry room (based on SUMMA sampling methods); TCE and PCE concentrations were above the residential indoor air RSL. Non-

site-related COPCs were also detected at or above their residential indoor air RSLs, including benzene and chloroform.

Property 0197-H is located on the boundary of the 50 µg/L isoconcentration contour line of the PCE plume (**Figure H.4-1**). The nearest groundwater sample location to Property 0197-H is GW-015, approximately 200 feet to the west, which was sampled in February 2016. PCE, TCE, and cis-1,2-DCE were detected in the groundwater collected at this location. Chloroform and PCE were detected above their residential groundwater VISLs.

The nearest soil gas sample was collected from Property 0050-H, approximately 130 feet to the west. HAPSITE testing was performed in March 2016 at 5 feet bgs. PCE and TCE were both detected in soil gas, but concentrations were not above the residential soil gas VISL.

The nearest outdoor ambient air sample was collected at Property 0064-H, approximately 80 feet to the west. Ambient air was sampled via SUMMA canisters in March 2022. PCE, TCE, and chloroform were detected in outdoor ambient air. Ambient air concentrations of these and other VOCs did not result in a cumulative non-cancer HI greater than 1 or cancer risk greater than 1E-06 (Section 4.4.3.5).

The lines of evidence described above indicate that groundwater and soil gas may represent an ongoing source of VI at Property 0197-H. Other non-site-related indoor sources may also be contributing to total exposures. Following the March 2022 sampling, suspected indoor sources were removed and additional indoor air samples were collected in April 2022[16]. TCE concentrations in four indoor air samples collected in April 2022 exceeded the Tier 1 RAL. However, the highest TCE concentrations were on the upper level of the structure, which suggests the TCE source is not VI related. A time-critical removal action was executed at 0197-H, while further evaluation of a suspected TCE source is ongoing (i.e., portable air filters were provided).

4.4.3.2 School Exposures

As discussed in Section 5.5.2.1 of the RI, six schools were sampled within the OU1 area, three of which were evaluated using HAPSITE testing in 2015. As discussed above, these data were qualified and not suitable for quantitative analysis in the risk assessment. The three schools included 0021-S, 0022-S, and 0028-S. RI activities at 0031-S were limited to soil gas sampling, but an independent contractor collected indoor air samples in 2012 that are not usable for the risk assessment[17]; these samples were all non-detect (IHI Environmental 2012).

Schools 0021-S and 0022-S are outside the 100 feet lateral boundary of the plume, and the depth to groundwater at 0028-S and 0031-S is greater than 100 feet (**Figure H.4-1**); therefore, these locations are outside the area of concern for VI. In addition, none of the site-related COPCs were detected above the residential indoor air RSL in the qualified HAPSITE data collected in 2015 from 0021-S or 0028-S.

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[16] Results for indoor air samples collected in April 2022 were not included in the risk assessment because validated data were not yet available at the time of the risk calculations. The exclusion of these results does not change the overall risk conclusions for this property.

[17] These data are not usable in the risk assessment because they were not collected under an approved QAPP, nor have they undergone the necessary data validation and review to meet the data quality standards set forth for inclusion in the RI.

One sample collected from 0022-S reported a concentration of PCE (11.2 µg/m^3) slightly above the residential indoor air RSL from a storage area. Two other samples collected at 0022-S reported concentrations of TCE above the residential indoor air RSL; these samples were collected from the café (1.3 µg/m^3) and Room 205 (0.67 µg/m^3). No results exceeded the commercial indoor air RSL for PCE or TCE. As described in Section 5.5.2.1 of the RI, a stainless steel cleaning solution containing TCE and PCE was observed in the second floor maintenance storage closest at the time of sampling, suggesting these detections of PCE and TCE were due to indoor air sources. In the absence of non-qualified data for this school, a quantitative risk evaluation was not included in the HHRA, but as an indoor source was identified at the time of sampling and this property is located outside of the VI investigation boundary, further assessment of this school is not necessary.

School 0045-S

For School 0045-S, in addition to an assessment of daycare children (Section 4.4.3.3), risks were evaluated for students and indoor workers such as teachers and indoor maintenance workers. As shown in **Table H.4-7**, the estimated RME non-cancer HIs were below 1 and cancer risks were at or below EPA's acceptable risk range of 1E-06 to 1E-04 for both students and indoor workers at the school. However, these risk estimates are based on HAPSITE data, meaning exposures are based on results for 1,2- dichloroethane, PCE, TCE, and VC. While these include the main site-related COPCs, it is possible that total exposures could be higher because of the contribution of other (non-site-related) volatiles.

HAPSITE testing was performed in March 2016 during three individual events—an initial survey (March 4, 2016), first pressure cycling (March 21, 2016), and second pressure cycling (March 22, 2016). The results of these events included 20 samples with detectable PCE, with a maximum concentration of 40 µg/m^3 in the chemical storage area of the auto shop on the ground level where interior sources of TCE and PCE were identified. During the survey of all four floors, detectable concentrations of PCE were only present in the auto shop. The pressure cycling was completed within three separate compartments on the ground level—Room A203/A205, Room A213, and Room A215. No detections were observed during the pressure cycling of Room A203/A205 or Room A213 (pressure cycling conducted on March 21, 2016). PCE was detected at concentrations less than the residential indoor air RSL in 17 samples during the pressure cycling in Room A215 (conducted on March 22, 2016), with the highest concentration at 2.3 µg/m^3. TCE was detected at one location, at 1.3 µg/m^3, which exceeds the residential indoor air RSL for TCE.

Subsequent HAPSITE testing undertaken at the school in December 2019 (under ambient conditions) included 15 detections of PCE, with a maximum concentration of 11.2 µg/m^3 in the ground-level boiler room. This concentration slightly exceeds the residential indoor air RSL and was the only exceedance reported in 2019. VC was also detected at one sample from the boiler room at 0.53 µg/m^3, which is above the residential indoor air RSL.

Despite the residential indoor air RSL exceedances for PCE, TCE, and VC at the school, estimated RME non-cancer HIs were less than 1 and cancer risk estimates were at or below 1E-06 for students and workers, based upon the maximum reported concentrations. (Potential risks to daycare children in School 0045-S were also below a level of concern; refer to Section 4.4.3.3.)

These results suggest that, while low-level detections of PCE and TCE may occur within School 0045-S, their presence may be attributable to interior sources.

School 0365-S

For School 0365-S, three indoor air SUMMA samples were collected during the March 2022 sampling event: one near the administration office, one in the rear elevator, and one in a storage room. PCE was detected in all three locations, with a maximum concentration of 0.31µg/m^3, which is below the residential indoor air RSL. TCE was not detected in any indoor air sample from School 0365-S.

Risks from indoor air exposures at School 0365-S were evaluated for students and indoor workers (i.e., teachers and indoor maintenance workers). As shown in **Table H.4-7**, the estimated RME non-cancer HIs were below 1 and cancer risks were at or below 1E-06 for both students and indoor workers at the school.

4.4.3.3 Daycare Exposures

Several licensed daycare facilities are known to exist within the OU1 study area, including within one of the schools, in VAMC Building 13, and on the University of Utah campus. Daycares may also be operating out of residential properties and churches in the study area. For the purposes of the HHRA, it was assumed that any property could operate as a daycare facility in the future. Thus, exposures for daycare children were assessed for one school (0045-S), one church (0366-C), VAMC Building 13, and all residential properties.

As shown in **Table H.4-8**, only three of the residential properties for which indoor air data were available had an estimated RME non-cancer HI slightly above 1 (0040-H, 0051-H, and 0059-H) for daycare children. While no individual chemicals had HQs greater than 1 for any property, site-related COPCs were the main contributors to total exposures at all three properties. Estimated RME cancer risks were within the acceptable range of 1E-06 to 1E-04 for all properties. For additional information about the three residential properties identified above, refer to the by-property discussion presented in Section 4.4.3.1. These results indicate there is the potential that daycare children could have slightly elevated exposures inside a few residences within the ESS area if they become daycare facilities in the future. However, as demonstrated in the risk estimates, the residential scenario is the more sensitive exposure scenario (i.e., residential risk estimates are higher because the exposure time and frequency is higher for residential children compared to daycare children). Thus, if risks are mitigated for residents, this will also be protective of exposures to daycare children.

Maximum indoor air concentrations within the school (0045-S), church (0366-C), and VAMC Building 13 did not result in unacceptable risks for daycare children (**Table H.4-8**); see Section 4.4.3.2 for additional discussion on indoor air results for School 0045-S.

4.4.3.4 Indoor Worker Exposures

Indoor air samples have been collected from five on-site VAMC buildings, including Buildings 6 and 7, which are closest to the suspected PCE source location. However, there are very few commercial properties located in the ESS area, and indoor air data suitable for quantitative analysis are unavailable for any commercial properties within the ESS area. Measured data for the

residential properties within the ESS area were used as a surrogate to estimate potential concentrations inside commercial properties within the ESS area.

As shown in **Table H.4-9**, when residential indoor air data are used as a surrogate for commercial properties, there are four properties where estimated RME non-cancer HIs exceed 1 for an indoor worker exposure scenario (0018-H, 0040-H, 0051-H, and 0059-H) and only one property (0003-H) where estimated RME cancer risks are at the upper end of EPA's acceptable risk range. At Property 0051-H, PCE was identified as the main driver for non-cancer effects but no individual chemicals had HQs greater than 1. At Property 0059-H, both TCE and PCE had HQs equal to 1, representing the main drivers at this property. For Property 0003-H, the main cancer risk drivers are 1,1,2,2-tetrachloroethane, benzene, chloroform, and ethylbenzene; none of these are site-related chemicals. For additional information about the residential properties identified above, refer to the by-property discussion presented in Section 4.4.3.1. These results indicate that, if commercial buildings have similar indoor air concentrations to the residential properties, unacceptable cancer risks are not expected for site-related COPCs, but PCE and TCE may contribute to unacceptable non-cancer HIs in a few locations.

As shown in **Table H.4-10**, for Building 13, Building 20, and Building 32, RME non-cancer HIs were below 1 and cancer risks were within EPA's acceptable risk range of 1E-06 to 1E-04. However, the risk estimates for Building 13 are based on HAPSITE data, meaning exposures are based on results for PCE and TCE only. While these two chemicals are the main site-related COPCs, it is possible that total exposures could be higher because of the contribution of other (non-site-related) volatiles. SUMMA samples have been collected inside both Building 20 and Building 32. Even so, exposures based on the SUMMA samples are within or below EPA's acceptable risk range.

For Building 7, the RME non-cancer HI was greater than 1 and the main risk driver is ethyl acetate, which is not a site-related chemical. For Building 6, the RME non-cancer HI was greater than 1 and the cancer risk was greater than 1E-05 primarily because of PCE. The RME cancer risks for Building 6 and Building 7 are within EPA's acceptable risk range of 1E-06 to 1E-04. Results for Building 6 are discussed further below.

In the following section, media concentrations are discussed relative to industrial/commercial screening levels, which are concentration levels that are derived based on a target HQ of 1 and target cancer risk of 1E-06. These screening levels are based on the most recent version (May 2022) of the EPA default industrial indoor air RSLs and the industrial groundwater and soil gas VISLs and are presented in **Table H.4-11**.

Building 6

For Building 6, initial HAPSITE testing performed in January 2019 showed numerous industrial/commercial indoor air RSL exceedances of PCE and TCE in indoor air. During initial sampling conducted on January 24, 2019, PCE concentrations ranged from non-detect to 916 µg/m^3. Indoor source screening showed the presence of PCE and TCE in various sources, including battery and brake cleaners and lubricants in the wood shop and electrician shop. (Note that HAPSITE results for these indoor sources were not included in the risk estimates.) PCE was also detected at the basement floor drain, but at concentrations much lower than those reported for the other indoor sources. After the removal of identified indoor sources, HAPSITE testing

conducted on January 30, 2019, showed PCE concentrations were lower and ranged from non-detect to 25.5 µg/m^3. TCE concentrations also decreased following the removal of identified indoor sources, with the concentrations of TCE ranging up to 7.1 µg/m^3 and decreasing to 2.5 µg/m^3 following the indoor source removal. After the removal of indoor sources, the maximum PCE and TCE indoor air concentrations were below the industrial/commercial indoor air RSL.

Subsequent SUMMA canister samples were collected from eight locations inside Building 6 in September 2019. PCE was consistently detected during this sampling event; however, no PCE concentrations were greater than the industrial/commercial indoor air RSL. In March 2021, SUMMA samples were collected from two locations—the basement and the boiler control room. Neither TCE nor PCE were detected above the industrial/commercial indoor air RSLs in either of these samples. If risk estimates for Building 6 were calculated based only on the most recent SUMMA samples (**Attachment H.7**), which were collected after the identified indoor sources were removed, RME non-cancer hazards were equal to 1 and RME cancer risk estimates were within EPA's acceptable risk range of 1E-06 to 1E-04. Chloroform was the main cancer risk driver, but this is not a site-related chemical.

The nearest groundwater sample location to Building 6 is MW-23; however, the depth to groundwater in this location is greater than 100 feet, precluding the likelihood for groundwater to represent a viable source for VI.

The nearest soil gas samples were collected from the subslab location VP-04 in March and July of 2019 and again in March of 2021. Concentrations were consistent temporally and for both HAPSITE and SUMMA results. PCE concentrations were above the industrial/commercial soil gas VISLs for all samples, with concentrations ranging from 19,600 µg/m^3 to 46,000 µg/m^3. Similarly, TCE concentrations were above the industrial/commercial soil gas VISLs for all samples, with concentrations ranging from 35 µg/m^3 to 54 µg/m^3. Chloroform was the only other COPC detected above the industrial/commercial soil gas VISL, at a maximum concentration of 43 µg/m^3. These soil gas results are consistent with the conclusion that VI is a contributing source to the indoor air concentrations of COPCs in Building 6.

Outdoor ambient air samples were collocated at Building 6. HAPSITE testing was conducted in January 2019 and subsequent SUMMA canister sampling was performed in September 2019 and March 2021. Several COPCs were detected in these samples, including 1,4-dioxane, benzene, carbon tetrachloride, chloroform, and ethyl acetate, ethylbenzene, m- and p-xylenes, and PCE. However, RME cancer risks and non-cancer hazards for outdoor worker exposures to ambient air were below a level of concern (Section 4.4.3.5).

The lines of evidence described above indicate that indoor sources were the primary contributors to total indoor worker exposures inside Building 6, but soil gas also represents an ongoing source of VI for this building. However, despite this exposure pathway being complete, there is no unacceptable human health risk to indoor workers at Building 6 under current conditions to site-related COPCs (including PCE and TCE).

4.4.3.5 Outdoor Ambient Air Exposures

Outdoor ambient air samples have been collected near 51 residential homes, two schools, and VAMC Buildings 6, 7, and 32. Outdoor air exposures at all residential properties were evaluated based on a residential exposure scenario, which is also protective of exposures for daycare children, and based on an outdoor worker exposure scenario. For the schools, outdoor air exposures were evaluated for both students and outdoor workers, which could include both teachers and maintenance workers. For VAMC Buildings 6 and 7, only an outdoor worker exposure scenario was evaluated because this is likely to be the most exposed receptor type. For VAMC Building 32, outdoor worker and residential exposure scenarios were evaluated because housing facilities are present in this building.

Attachment H.8 presents the detailed risk calculations for outdoor air, and **Tables H.4-12** through **H.4-15** summarize the RME results for each property from inhalation of outdoor air based on the maximum concentrations. As shown in **Table H.4-12** (residential exposures), **Table H.4-13** (daycare children exposures), **Table H.4-14** (outdoor worker exposures), and **Table H.4-15** (school and VAMC building exposures), estimated RME non-cancer HIs were below 1 at all locations for all receptor types. Although there were a few locations with estimated RME cancer risks above 1E-06, no locations had risks greater than 1E-05; thus, cancer risks were within EPA's acceptable risk range. These results are consistent with the expectation that volatile chemicals in outdoor air will rapidly dissipate and exposure to outdoor air is a negligible contributor to total exposures.

4.4.4 Properties without Measured Air Data

As discussed in Section 3.10.1 of the RI, requests for sampling were sent to property owners in the ESS area to obtain access to conduct indoor air sampling. Any sampling on private property is voluntary, and numerous attempts were made from 2015 to 2022 to obtain access to homes in the neighborhood. Multiple outreach campaigns have been conducted to attempt to obtain access for sampling, including holding public meetings, sending letters and postcards, going door to door, and using social media. RI Figure 6-29C shows the locations within the VI study area where the VA has attempted to gain access to structures to collect indoor air samples during the RI. In total, 111 structures have been sampled at the site, including residences, businesses, schools, churches, and VAMC campus buildings (**Figure H.4-1**). Despite attempts to conduct indoor air sampling at as many residential properties as possible within the ESS area, many properties do not have measured indoor air data. Thus, it becomes necessary to estimate potential indoor air conditions for these properties from other site information. To this end, there are several potential datasets that may be useful to inform risk determinations for unsampled properties.

The risk results described in Section 4.4.3.1 provide the most representative information to estimate what potential exposures might be inside unsampled residential properties within the ESS area. The estimated RME non-cancer hazards and cancer risks for site-related COPCs were below a level of concern for most residential properties, but non-cancer hazards exceeded 1 for five properties (less than 10% of sampled properties). Inspection of the indoor air datasets and collocated information on soil gas and groundwater indicates the VI pathway is likely complete at several residential properties within the ESS area but does not result in an unacceptable risk under current conditions. Other indoor sources of both site-related COPCs (PCE and TCE) and non-site-related volatiles were noted at several properties.

As discussed in Section 5.5.2.2 of the RI, during the indoor air sampling events, a total of five structures had a concentration of PCE that exceeded the Tier 1 RAL in at least one sample (0023-H, 0037-H, 0040-H, 0051-H, and 0059-H). Two structures had a concentration of TCE that exceeded the Tier 1 RAL (0054-H and 0197-H). Interim measures were taken at four properties to mitigate exposures. A VIMS was originally installed at Property 0040-H; however, because of noise complaints from the homeowner, this system was removed and replaced by portable air filtration units. Portable air filters were also provided to Property 0197-H as an interim measure pending further investigation of the indoor TCE source. Floor cracks were sealed at Property 0037-H and Property 0051-H to minimize the potential for VI.

These results suggest that, while VI may be occurring for residential properties without measured indoor air data, the majority of these properties are likely to have indoor air exposures that are within EPA's acceptable risk ranges. However, it is possible there could be a few properties within the ESS area, like Properties 0037-H, 0040-H, and 0051-H, where VI exposures may result in unacceptable non-cancer hazards that would require mitigation.

RI Figure 5-7 presents the indoor air sample locations and sample type, color coded by the maximum PCE detection relative to the residential indoor air RBSL and Tier 1 RAL. The properties with exceedances of the RBSL and Tier RAL are generally located in the vicinity of the intersection of 900 South and 1200 East. Thus, this is the area where unsampled properties have the highest potential to result in unacceptable hazards.

Property characteristics where VI may be occurring include, but are not limited to, the following:

- Properties in the ESS area where the basement has moisture issues due to the presence of shallow groundwater
- Properties in the ESS area with daylighting seeps/springs in the yard and/or where sump water is present that can directly volatilize into indoor air
- Properties in the ESS area where basement floor and/or foundation cracks are present
- Properties in the ESS area with bare soil crawl spaces
- Properties in the ESS area where sewer or underground utility lines enter through the floor or foundation without adequate sealant
- Older properties in the ESS area, since homes built (or remodeled) using more recent construction practices tend to be more airtight (i.e., less susceptible to VI) than older homes

The presence of one or more of these property characteristics would tend to increase the potential for unacceptable exposures because of VI.

4.4.4.1 Plume Extents

Available groundwater data and soil gas data can also be used to identify the areas where the potential for VI exposures is likely to be highest. Section 4.3.2 provided a summary of the extent of the PCE groundwater plume (RI Figure 5-4A) and Section 4.3.3 discussed the area where VI has the potential to be of most concern (RI Figure 6-29A). In brief, the area of interest for indoor air

impacts is defined by the proximity to and the concentrations within the groundwater plume. The shallower the groundwater, the more readily VOCs can volatilize at atmospheric pressure and the shorter the pathway to enter the atmosphere or overlying structures. Therefore, the thickness of the soils above groundwater (i.e., depth to groundwater) is an important contributing factor to VI. In the ESS area, contaminated groundwater daylights and is actively removed from basements using sumps or diverted from properties.

RI Figure 5-6 presents the soil gas sample locations and sample type, color coded by the maximum PCE detection relative to the residential soil gas RBSL. The highest soil gas concentrations of PCE were within the ESS area and centered around Property 0053-H. The highest soil gas concentrations of TCE were also present near this property. Thus, the site soil gas data also support the conclusion that properties within the vicinity of the intersection of 900 South and 1200 East have the highest potential for VI concerns.

The PCE and TCE groundwater plumes were interpolated using Leapfrog® Works groundwater visualization software. Leapfrog is a software that enables users to develop three-dimensional models of groundwater contamination plumes. The software uses radial basis functions, which are mathematically equivalent to kriging, with an anisotropy of 10-5-1 in the direction of groundwater flow, to interpolate groundwater concentrations between sampled points. The most recent result from each groundwater/surface water location was incorporated into the interpolation with the following exceptions—the Mt Olivet well results and select surface water results were excluded from the interpolation. The 95UCL contour values were calculated in C Tech's EVS-Studio using the same dataset and the min-max function set at 95. A grid of EVS-Studio interpolated grid values was imported into Leapfrog Works to develop 95UCL plume boundaries.

Figure H.4-2 presents the predicted PCE contours based on the available groundwater data. In this figure, three PCE contour lines are presented—5 µg/L (green), 10 µg/L (yellow), and 50 µg/L (orange). The PCE MCL is 5 µg/L and was used to define the initial inclusion zone for assessing VI (EPA 2015b). The residential risk-based concentration of PCE in groundwater associated with a target HQ of 1 is 42 µg/L. The estimated PCE contours for 10 µg/L and 50 µg/L are presented based on both the nominal model output (shown as solid lines), which represents the best estimate, and based on the 95UCL (shown as dotted lines), which takes into consideration the result variability and uncertainty in the model estimates. Notice that the eastern extent of these 95UCL contours is truncated. This is because the depth to groundwater is greater than 100 feet beyond this extent; thus, there is little potential for VI beyond the eastern limit of the contour lines. Inspection of **Figure H.4-2** shows the extent of the PCE plume in groundwater based on 95UCL predictions is generally consistent with the nominal extents, with the contours usually only extending an additional 100 to 250 feet beyond the nominal prediction. This suggests that the uncertainty in the plume modeling is unlikely to change the area of primary VI interest for PCE.

Figure H.4-3 presents the predicted TCE contours based on the available groundwater data. In this figure, two TCE contour lines are presented—0.5 µg/L (green) and 2.5 µg/L (yellow). The TCE MCL is 5 µg/L and the residential risk-based concentration of TCE in groundwater associated with a target HQ of 1 is 2.1 µg/L. The estimated TCE contours are presented based on both the

nominal model output (shown as solid lines), which represents the best estimate, and based on the 95UCL (shown as dotted lines), which takes into consideration the result variability and uncertainty in the model estimates. As shown, the groundwater plume extent for TCE is much smaller than the plume extent for PCE, but the highest concentrations are expected to occur within the same area, where PCE VI concerns are likely to be highest. The extent of the TCE plume in groundwater based on 95UCL predictions is very consistent with the nominal extents, with the contours usually only extending less than 100 feet beyond the nominal prediction. Meaning that the areas of primary VI interest for TCE is consistent, regardless of modeling uncertainty.

The site soil gas data and groundwater plume maps consistently show that properties within the ESS area in vicinity of the intersection of 900 South and 1200 East have the highest potential for VI concerns. The available indoor air data corroborate this conclusion and show that this is also the area where the highest indoor air exposures have been reported, including the four properties (0037-H, 0040-H, 0051-H, and potentially 0197-H) where interim measures were taken to address PCE and TCE that were attributable to VI.

4.4.4.2 Correlations Between Media

To understand the potential relationships between COPC concentrations in the different media types (indoor air, soil gas, and groundwater), regressions between various combinations were considered[18] as presented in the figures in **Attachment H.10**. If a positive relationship is observed between the COPC concentrations in indoor air and soil gas or indoor air and groundwater, this would support the conclusion that this COPC in indoor air is influenced by VI.

As observed from the regression plots, weak or no correlations were observed between most COPCs in most media. These regressions were based upon the maximum concentration of the respective analyte in the respective media at each location. Thus, the weak correlations are likely because of the spatial and temporal variability in the concentrations at a location and limited occurrences where COPCs were present in the same location in different media. The lack of correlation may also be because of property-specific differences that affect VI potential (e.g., presence of floor cracks, sump effectiveness and maintenance). While the lack of COPC detections in site media makes development of correlations challenging, the fact of limited occurrences is consistent with the conclusions that exposures are generally low at this site as indicated by the risk calculations.

Figure H.4-4 presents an example illustration of the relationship between PCE concentrations in collocated media. In this figure, the vertical green line indicates the residential screening level for the medium represented on the *x* axis (e.g., the residential groundwater VISL), and the horizontal yellow line indicates the residential screening level for the medium represented on the *y* axis (e.g., the residential soil gas VISL). As shown, there is a weak relationship between samples that exceed the screening level of one medium with an exceedance of the paired medium. A brief discussion of the relationships (or lack thereof) for PCE and TCE is provided below.

- **PCE.** No relationships were observed between PCE concentrations in any combination of mediums, including groundwater and soil gas (R^2=0.0052; Panel A), groundwater and

[18] Note that indoor air samples excluded from the risk calculations were also removed from the correlation datasets, including the post-mitigation samples for properties 0040-H and 0054-H, and the interior source samples from Building 6 at the VAMC campus.

indoor air (R^2=0.0027, Panel B), or soil gas and indoor air (R^2=0.0007, Panel C). The lack of relationship between soil gas and indoor air held when confined to the ESS area only (R^2=0.0008, Panel D).

- **TCE.** As shown in **Figure H.10-2** of **Attachment H.10**, a weakly negative relationship was observed between TCE in groundwater and soil gas (R^2=0.30, Panel A) and between TCE in soil gas and indoor air (R^2=0.026, Panel B). A weakly positive relationship was observed between groundwater and indoor air (R^2=0.18, Panel C), and no relationship was observed between soil gas and indoor air in the ESS area (R^2=0.0097, Panel D).

This evaluation was repeated for the list of non-site-related COPCs most frequently identified as risk drivers for indoor air, including 1,3-butadiene, 1,2-dichloroethane, benzene, chloroform, and ethylbenzene. Figures for other media combinations and chemicals are shown and discussed in **Attachment H.10**. In general, the regressions show no or weak relationships for all chemicals, suggesting indoor air concentrations are attributable to indoor sources and not VI impacts. Only ethylbenzene in groundwater and soil gas reported a coefficient of determination greater than 0.6, however, this was based on only three data pairs (**Figure H.10-5** of **Attachment H.10**, Panel A).

4.4.4.3 Correlations Between Analytes

In addition to evaluating the relationship between COPC concentrations in different media, to understand the potential relationships between COPCs within a medium, regressions between various combinations of COPCs were considered as presented in the figures in **Attachment H.10**. If a positive relationship is observed between two chemicals indoor air, this could indicate that both chemicals are derived from the same source.

Figure H.4-5 presents an example illustration of the relationship between PCE and TCE concentrations in different media (Panel A: indoor air, Panel B: soil gas, Panel C: groundwater). In this figure, the vertical green line indicates the residential screening level for PCE for the medium on the *x* axis and the horizontal yellow line indicates the residential screening level for TCE for the medium on the *y* axis. A brief discussion of the relationships between PCE and TCE in indoor air, soil gas, and groundwater are discussed below. **Attachment H.10** provides the figures and discussion for the other COPCs evaluated.

- **Indoor Air.** There was a weakly positive association between PCE and TCE concentrations in indoor air (R^2=0.18, Panel A). When confined to the ESS properties, the relationship is conserved (R^2=0.22) (**Attachment H.10** contains area-specific figures).

- **Soil Gas.** There was a positive association between PCE and TCE (R^2=0.40, Panel B) in soil gas. The strength of the association is generally conserved for data at the individual areas of the site, including the VAMC campus (R^2=0.39, Panel D), Sunnyside area (R^2=0.48, Panel C), and the ESS area (R^2=0.42) (**Attachment H.10** contains area-specific figures).

- **Groundwater.** When evaluated on a sitewide basis, there was no relationship between PCE and TCE (R^2=0.0024, Panel C). However, when the regression was restricted to specific areas, positive correlations were noted (**Attachment H.10** contains area-specific figures). PCE and TCE in groundwater were strongly correlated in both the Sunnyside area

(R^2=0.85) and on the VAMC campus (R^2=0.72); however, this relationship did not hold in the ESS area (R^2=0.067). Notably for both the Sunnyside and VAMC campus data sets, these relationships may be artificially inflated by isolated high concentration detections. Regardless, the relationships suggest that the relationship between PCE and TCE in groundwater is more strongly correlated closer to the source.

This evaluation was repeated for the list of non-site-related COPCs most frequently identified as risk drivers, including 1,3-butadiene, 1,2-dichloroethane, benzene, chloroform, and ethylbenzene. Figures for other media combinations and chemicals are shown and discussed in **Attachment H.10**. In general, the regressions show no or weak relationships for all chemicals, suggesting concentrations of COPCs are independent of one another. Only benzene and ethylbenzene and benzene and chloroform in indoor air reported a coefficient of determination greater than 0.7 (**Figure H.10-6** of **Attachment H.10**, Panels C and D, respectively).

The general absence of strong relationships between the different media and analytes indicates it may not be possible to predict exposures at an individual location based on nearby measurements of indoor air, soil gas, or groundwater. Nevertheless, inspection of the larger datasets for these media show that the general area where these media indicate the potential for unacceptable exposures may occur does overlap in the ESS area. This shows there is a correlation between PCE and TCE in groundwater, soil gas, and indoor air when assessed for the larger ESS area.

Section 5
Uncertainty Assessment

Confidence in the quantitative evaluation of the risks to humans from environmental contamination may be limited by uncertainty regarding a number of key data items, including concentration levels in the environment, the true level of human contact with contaminated media, and the true dose-response curves for non-cancer and cancer effects in humans. This uncertainty is usually addressed by making assumptions or estimates for uncertain parameters based on available data. Because of these assumptions and estimates, the results of risk calculations are themselves uncertain, and it is important for risk managers and the public to keep this in mind when interpreting the results of a risk assessment. The following sections review the main sources of uncertainty in the risk calculations performed for the site.

5.1 Data Limitations

5.1.1 Data Adequacy

The data adequacy evaluation is a qualitative determination of whether the available data are representative in space and time. Section 2.2 summarizes the datasets that were used in the HHRA to select COPCs and quantify exposures and risks. The following provides a brief discussion of some of the potential data adequacy issues for the results used to support the HHRA risk conclusions.

5.1.1.1 Indoor Air

Indoor air concentrations of volatile chemicals related to VI can be highly variable, both spatially and temporally. Thus, it is important to review the representativeness of the available indoor air data for each property to ensure results are adequate to assess potential human health exposures.

In general, indoor air sampling investigations have focused on evaluating properties located above the PCE groundwater plume. **Figure H.4-1** shows the extent of the PCE groundwater plume. Additionally, because the potential for VI is higher when the depth to groundwater is shallower, indoor air sampling outreach efforts have focused on evaluating properties where the depth to groundwater is less than about 100 feet (**Figure H.4-1**). The depth to groundwater is approximately 150 to 200 feet near the VAMC campus but becomes shallower to the west of the VAMC campus. Several groundwater seeps and springs are emanating at the ground surface in the ESS area where the depth to groundwater is less than 50 feet (**Figure H.4-1**).

For this reason, attempts have been made to conduct indoor air sampling at as many properties as possible within the ESS area. In total, access was requested at more than 350 properties and access was granted at 106 properties in the ESS area, including 97 residential properties, six schools, two churches, and one elderly care facility. RI Figure 6-29C illustrates the property access status for all structures within the ESS area where there is a higher potential for VI impacts. A subset of these properties (86 residential properties, two schools, and one church) had indoor air data suitable for quantitative analysis because a large number of HAPSITE results collected in 2015 could not be used in the risk assessment. **Table H.4-1** identifies the properties

with HAPSITE results that were not usable for risk assessment (see blue shaded cells). RI Table 5-12 presents the detailed HAPSITE results. Indoor air data adequacy was evaluated on a property-specific basis, considering the following:

- Magnitude of the underlying PCE groundwater concentrations
- Sampling/analysis methods of the collected indoor air data
- Spatial/temporal representativeness of the collected indoor air data
- Magnitude of indoor air results relative to risk-based thresholds

PCE (and TCE) concentrations are variable within the groundwater plume. Robust characterization of indoor air is most important for properties that are located above the plume, where shallow groundwater concentrations are higher than groundwater VISLs. Inspection of **Figure H.4-2** (PCE) and **Figure H.4-3** (TCE) shows the higher plume concentrations are within about one block of the 900 South and 1200 East intersection.

Three devices have been employed to measure VOCs in air—in-field HAPSITE, SUMMA canisters, and passive samplers. There are pros and cons associated with each of these methods, with implications for the HHRA. In particular, HAPSITE data, while useful for real-time decision-making in the field, is limited to a select analyte list, specifically PCE, TCE, and cis-1,2-DCE. Further, these data are generally considered to be of screening level quality. For some properties, only HAPSITE data are available because the results did not suggest VOC concentrations approached a level of potential concern. Both SUMMA and passive samples provide more representative data than HAPSITE testing because of their longer sampling duration. Passive samplers are the most representative estimate of likely exposure given the length of deployment of the devices (e.g., several weeks); however, this method has a reduced analytical suite as compared to SUMMA canister sampling. While SUMMA canisters provide the most expansive list of analyzed VOCs, the sampling durations are shorter (i.e., 24 hours) and some chemicals do not have adequate MDLs relative to risk-based thresholds.

In addition to the sampling/analysis methods, the data adequacy evaluation also considered the conditions under which samples were collected and the location where samples were collected. The collection of a 3-week passive sample within a frequently used living space provides results that are likely to be the most representative of a long-term exposure. However, HAPSITE and SUMMA data can also provide adequate data for risk characterization provided they represent the high-end of potential exposure conditions. For example, in many instances, the HAPSITE data were collected under pressure cycling; thus, HAPSITE results collected under negative pressure would represent conditions when VI impacts (if occurring) would be greatest. Additionally, while SUMMA canister sampling durations are shorter, if these canisters are placed in locations with higher VI potential, such as near sumps or basement living areas, these data would also represent higher exposure conditions relative to other more frequently occupied living spaces inside the property (e.g., a second-story bedroom) where VI impacts would tend to be lower.

To evaluate if there were important differences in risk conclusions as a function of sampling/analysis method, RME risk estimates were determined for each property where indoor air samples were available for different methods. **Attachment H.7** presents the detailed results

for each property and results are summarized in **Table H.5-1**. For 13 properties, all the available data were collected using a HAPSITE. While HAPSITE data are useful for real-time decision-making in the field, results are limited to a select analyte list, specifically PCE, TCE, 1,2-dichloroethane, cis- and trans-1,2-DCE, and VC, which includes the site-related VOCs. Inspection of **Table H.5-1** shows total hazards/risks based on the HAPSITE results are often lower than those based on the SUMMA results. This is also true for the passive sampler results. This is likely an artifact of the larger VOC analyte list reported for SUMMA results compared to HAPSITE and passive sampler results. However, when hazards/risks are restricted to the site-related COPCs, the risk conclusions are generally consistent regardless of the sampling/analysis methods.

Nearly every property sampled for indoor air was evaluated in the winter during the heating season. The timing of these sampling events was intentional to target the most likely occurrence of the highest rates of soil gas entry, as VI is often worse in buildings in the winter when windows are closed, and heating systems are on. While temperatures are warmer in the summer, which could increase volatilization rates, this would also be the time when properties would tend to have higher ventilation rates, due to open windows, and more positive pressure (e.g., when air conditioning and swamp coolers are in operation). Thus, the available indoor air data are likely to be representative of the high end of long-term exposure conditions.

In August 2021, indoor air data were collected at 10 residences, 9 of which had been previously sampled, providing a comparison between results obtained in winter and summer months. As discussed in Section 4.4.3, in general, most properties had similar or lower indoor air concentrations during the summer sampling events as compared to winter sampling events. The three properties where new property-specific COPCs were identified in August 2021 (0037-H, 0051-H, and 0059-H) reported comparable or lower concentrations of site-related COPCs, including PCE, indicating that VI of site-related COPCs does not appear to be occurring to a greater degree in summer. These data suggest that seasonality does not appear to significantly affect VI contributing to site-related COPC impacts in indoor air.

In addition, as noted previously, inspection of transducer results for select monitoring wells showed minimal seasonal changes in water level and suggest that groundwater-level fluctuations are due to variations in annual precipitation and climate. Thus, an evaluation of temporal patterns in indoor air concentrations should focus more on coinciding with groundwater levels rather than any specific season. Even so, groundwater level fluctuations at MW-14S, located just downgradient of the toe of the plume where PCE concentrations are highest, exhibits almost no change in water level elevation over time. While changes in groundwater elevation may have an effect on the degree to which VI is occurring, the minimal changes in water levels observed in the ESS area indicate seasonal effects are minor.

Given the potential temporal variability in indoor air concentrations, it is desirable to collect multiple rounds of indoor air to quantify long-term exposure conditions. This is most important for properties where the sampling variability has the potential to alter risk management decision-making. For example, if indoor air data collected under high-end exposure conditions are well below risk-based decision thresholds, it is not necessary to conduct multiple sampling rounds to conclude exposures would not result in unacceptable risks. Likewise, if indoor air data are well

above risk-based decision thresholds, limited data are necessary to conclude mitigation is needed. The collection of multiple sampling rounds is most important for properties that approach or slightly exceed risk-based decision thresholds.

Based on the data adequacy considerations described above, with few exceptions, the collected indoor air data are deemed adequate to support risk determinations. There are a few properties where additional indoor air data may be desired (0054-H and 0102-H), but the property owners have declined to participate in further sampling efforts. There are also a few properties recently sampled in March 2022 where an additional round of sampling may be appropriate because of low level exceedances of the PCE residential RBSLs and detections of TCE (0192-H, 0263-H, 0274-H, 0336-H). However, additional data are not essential at this time to understand and evaluate risk associated with VI at the site.

While the available indoor air data are spatially representative of the properties of interest within the ESS area (**Figure H.4-1**), future data collection could be performed for unsampled structures within the ESS area to determine if there are properties with unacceptable risks from elevated concentrations of PCE and TCE in indoor air because of site-related activities.

5.1.1.2 Shallow Soil

No measured shallow soil (0 to 10 feet bgs) data are available within the ESS area. Nearly all the available shallow soil data were collected from near the VAMC buildings and the sanitary sewer lines where PCE spills and releases occurred (RI Figure 5-1). As noted previously, outside of the seep/spring areas, shallow soil contamination is likely to be negligible; thus, evaluating shallow soil exposures at the VAMC campus is likely to be adequately protective of exposures within the ESS area.

5.1.1.3 Surface Water and Sediment

Three sediment samples have been collected from seeps/springs (SW- prefix locations in RI Figure 5-1). Surface water exposures are likely to be the more important medium for seep/spring exposures. Since 2016, up to 100 surface water samples have been collected from site seeps/springs, sumps, and Red Butte Creek and analyzed for a range of contaminants, including the site-related chemicals of interest. Thus, while the available sediment dataset is limited, the surface water dataset is comprehensive and spatially representative of the ESS area (RI Figure 3-6), which is the area where surface water exposures have the highest potential to occur.

5.1.2 Accuracy of Analytical Measurements

Laboratory analysis of environmental samples is subject to technical difficulties and values reported by the laboratory may not always be correct. The magnitude of analytical error is usually small compared to other sources of uncertainty, although the relative uncertainty increases for results near the MDL. The risk assessment includes J-qualified results, recognizing there is a higher degree of analytical uncertainty in these estimated values.

5.1.3 Detection Limit Adequacy

Detection limit adequacy is determined by performing an evaluation of the achieved laboratory detection limits for each chemical in each medium in cases where the analytes were infrequently detected to determine if the achieved detection limits were low enough to support risk

management decision-making. This detection limit adequacy evaluation is described in Section 2.3.4 and discussed in detail below.

During the COPC selection process, several analytes were not detected or were infrequently detected in site media based on the sitewide dataset. For infrequently detected chemicals, the mean of the MDL was compared to the appropriate risk-based screening level. When the MDL was higher than the screening level, the chemical was identified as a "Qual. 1" chemical, meaning a qualitative discussion of the potential implications of the inadequate detection limit would need to be discussed as part of the uncertainty assessment. **Tables H.2-1 through H.2-6** summarize the Qual. 1 chemicals for each medium.

- For soil/sediment, there were no chemicals identified as Qual. 1, meaning the achieved MDLs for all chemicals were adequate relative to the residential soil RSLs.
- For soil gas, three chemicals had inadequate MDLs relative to the residential soil gas VISLs: 1,2,4-trichlorobenzene, 1,2-dibromoethane, and hexachloro-1,3-butadiene.
- For indoor air, one non-detected chemical (allyl chloride) had inadequate MDLs relative to the residential indoor air RSL. For outdoor air, there were nine infrequently detected chemicals with inadequate MDLs, including 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, 1,2,4-trichlorobenzene, 1,2-dibromoethane, allyl chloride, benzyl chloride, bromodichloromethane, bromomethane, and hexachloro-1,3-butadiene.
- For groundwater and surface water, 35 infrequently detected chemicals had inadequate MDLs relative to the residential tap water RSL and/or residential groundwater VISL, including 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, 1,1'-biphenyl, 1,2,4,5-tetrachlorobenzene, 1,2-dibromo-3-chloropropane, 1,2-dibromoethane, 2,4,6-trichlorophenol, 2,4-dinitrotoluene, 2,6-dinitrotoluene, 3,3'-dichlorobenzidine, 4,6-dinitro-2-methylphenol, 4-chloroaniline, aldrin, atrazine, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, bis(2-chloroethyl) ether, dibenzo(a,h)anthracene, dibenzofuran, dieldrin, heptachlor, heptachlor epoxide, hexachloro-1,3-butadiene, hexachlorobenzene, hexachlorocyclopentadiene, hexachloroethane, indeno(1,2,3-cd)pyrene, naphthalene, nitrobenzene, n-nitroso-di-n-propylamine, pentachlorophenol, toxaphene, and VC.

As noted above, there was only one chemical in indoor air identified as a Qual. 1 chemical (i.e., the chemical was never detected and the MDL was not adequate). However, as discussed in the risk evaluation for properties with measured indoor air (Section 4.4.3), property-specific hazards/risks are likely biased high because of the contribution of non-detect COPCs with inadequate MDLs. In the property-specific risk calculations, COPCs that were not detected at a property were evaluated based on the MDL (or the RL if the MDL was not provided). For most properties, usually about 70% of the total exposure is because of non-detected COPCs. Eight VOCs (1,1,2,2-tetrachloroethane, benzyl chloride, 1,1,2-trichloroethane, 1,2,4-trichlorobenzene, 1,2-dibromoethane, bromodichloromethane, bromomethane, and hexachloro-1,3-butadiene) are rarely detected in indoor air, but their achieved MDLs are inadequate relative to the indoor air RSL. These chemicals were identified as COPCs because the maximum detected concentration was above the indoor air RSL; thus, they were not identified as Qual. 1 chemicals although the

achieved MDLs were not adequate. None of these COPCs are site-related or expected to be present in indoor air.

This shows the MDLs achieved during the analysis of several chemicals in site media were too high to determine if they may be present at an unacceptable exposure level. The potential issue with inadequate MDLs was recognized at the time of the development of the governing sampling and analysis plan for the investigations. Samples were collected and analyzed using the best available techniques and standard analytical methods. For most chemicals, there is no expectation that the chemicals are site-related; thus, the lack of adequate MDLs does not preclude risk determinations for the contaminants that are likely to be attributable to site releases.

There is one instance where a site-related contaminant had an inadequate MDL. VC was never detected in groundwater, but the average MDL for VC (0.12 µg/L) was higher than the residential tap water RSL (0.09 µg/L); however, because the basis of the VC RSL is a target cancer risk of 1E-06, even if it were assumed VC were present at the MDL, this would result in a potential cancer risk of 6E-06. Additionally, the achieved MDL is well below the drinking water MCL for VC of 2 µg/L.

5.2 Exposure Assessment

The following section discusses the main uncertainties in the exposure assessment, including uncertainties related to exposure pathways and chemicals that were not quantitatively evaluated, uncertainties in the EPCs used in the risk calculations, uncertainties in the selected exposure parameters for each receptor population, and uncertainties in the assumptions regarding chemical absorption.

5.2.1 Uncertainties from Exposure Pathways Not Evaluated

As illustrated in the CSEM (**Figure H.2-1**), humans may be exposed to site-related chemicals by several pathways, but not all pathways were evaluated quantitatively in this risk assessment. This is because the contribution from some pathways were believed to be minor compared to one or more other pathways that were evaluated.

For example, no quantitative risk calculations were performed for exposures to soil/sediment or surface water. This is because the initial risk screen, performed as part of the COPC selection, showed that maximum concentrations were below the conservative screening levels, which demonstrates exposure pathways for these media are likely insignificant compared to the other complete pathways that were quantitatively evaluated in the HHRA (i.e., indoor air exposures).

Potential risks from the ingestion of homegrown vegetables were also not evaluated quantitatively. As discussed in Section 2.1.4.4, the primary contaminants of interest for this site (i.e., PCE and TCE) are not expected to bioaccumulate in plant tissues. Thus, irrigation of home gardens with water derived from seeps/springs is unlikely to result in garden produce items that would have unacceptable tissue levels of these volatile chemicals. Exclusion of these exposure pathways could result in a small underestimation of exposure and risk, but the magnitude of this underestimation is expected to be too small to affect the overall conclusions of the risk assessment.

5.2.2 Uncertainties from Chemicals Not Evaluated Quantitatively

Chemicals for which the maximum detected concentration was below its respective screening level were not retained as COPCs and not evaluated quantitatively in this assessment. In most cases, exclusion of these chemicals is not a significant source of uncertainty, because the highest level of the chemical detected did not exceed a level of concern.

Excluding chemicals that are not detected is appropriate provided that the achieved detection limits were low enough to detect a chemical if it were present at a level of concern. As described in Section 5.1.3, the average MDLs were deemed to be inadequate for several chemicals (see chemicals identified as Quant. 1 in **Tables H.2-1 through H.2-6**). Additionally, toxicity data is lacking for several other chemicals, which precludes the calculation of quantitative risk estimates (Section 5.3.1). Exclusion of these chemicals from quantitative risk estimates could result in an underestimation of exposure and risk, but the analytical methods employed in the investigation provide the best available detection limits using conventional analytical instruments and the risk calculations used toxicity data approved for use in HHRAs.

5.2.3 Uncertainties in Exposure Point Concentrations

In all exposure calculations, the desired input parameter is the true mean concentration of a contaminant within a medium, averaged over the area where random exposure occurs. However, because the true mean cannot be calculated based on a limited set of measurements, EPA (1989, 1992) recommends that the exposure estimate be based on the 95UCL on the mean. When data are plentiful and inter-sample variability is not large, the 95UCL may be only slightly higher than the mean of the data. However, when data are sparse or are highly variable, the 95UCL may be much higher than the mean of available data or may not be able to be calculated (e.g., a reliable calculation of the 95UCL requires at least 8 to 10 samples).

Initially, all risk calculations were performed based on the maximum concentration for each exposure area. Subsequent risk calculations for some media in a few exposure areas were performed based on the 95UCL. However, available datasets were usually too small to allow for the computation of 95UCLs. Additionally, for the indoor air datasets, the samples were often collected from locations that were not necessarily most representative of the areas where the majority of time would be spent by the receptors of interest. For example, indoor air samples were often collected from basements, crawl spaces, and sump rooms, since these are the areas where indoor air concentrations would likely be highest if VI was occurring. However, it is unlikely that a large fraction of the total residential exposure time would be spent in these areas. For this reason, the property-specific risk evaluations for indoor air were based on maximum concentrations, and subsequent discussions of the available data for each property relied on comparisons to RSLs (i.e., indoor air RSLs and groundwater and soil gas VISLs) to provide a frame of reference for interpreting the reported concentrations.

5.2.4 Uncertainties in Human Exposure Parameters

Accurate calculation of risk values requires accurate estimates of the level of human exposure that is occurring. However, many of the required exposure parameters are not known with certainty and must be estimated from limited data or knowledge. For example, site-specific data are not available on the exposure time and frequency of outdoor and construction workers, and the values used in the calculations are based mainly on standard EPA default RME values and

professional judgment. In general, when exposure data were limited or absent, exposure parameters were chosen in a way that was intended to be conservative. For example, the exposure frequency for students was assumed to be 180 days per year based on information provided by the U.S. Department of Education (**Table H.3-2**). The selected RME exposure parameter values are more likely to overestimate than underestimate actual exposure and risk.

5.2.5 Uncertainties in Chemical Absorption (RBA)

The risk from an ingested chemical depends on how much of the ingested chemical is absorbed from the gastrointestinal tract into the body. This issue is especially important for metals in soil because some of the metals may exist in poorly absorbable forms and failure to account for this may result in a substantial overestimation of exposure and risk. In this assessment, it was assumed the RBA was 1.0 (100%) for all COPCs. Use of this assumption is likely to overestimate the true risk, with the magnitude of the error depending on the true RBA value. Because risk estimates are already below levels of concern for most COPCs, this uncertainty is unlikely to affect the conclusions of the risk assessment.

5.3 Toxicity Assessment

5.3.1 Uncertainties from Chemicals without Toxicity Values

As discussed above, toxicity values are needed to quantify risks from exposure to chemicals detected in environmental media. Toxicity values are not available for some of the chemicals detected at the site. In the COPC selection (**Tables H.2-1 through H.2-6**), these chemicals were identified as a "Qual. 2" or "Bkg." Chemicals that were not detected but do not have screening levels to assess detection-limit adequacy were identified as "Qual. 2" chemicals. Detected chemicals that do not have screening levels were identified as "Bkg." chemicals because the only way to assess if they may be site-related or elevated is to make comparisons between site samples and background (or reference) locations.

Although no strong conclusions can be reached regarding the potential for risk from chemicals without toxicity values, it is suspected that the magnitude of the error that results from excluding these chemicals is likely to be low. This is because the absence of toxicity information for a chemical is most often because toxicological concern over that chemical is low. That is, chemicals that lack toxicity values have often not been well studied because existing data suggest relatively low toxicity to humans and researchers have focused on chemicals with a higher potential for toxicity.

Nine chemicals were detected in soil gas, indoor air, and/or outdoor air that do not have toxicity information: 1,2-dichlorotetrafluoroethane, 1,3-dichlorobenzene, 2,2,4-trimethylpentane, 4-ethyltoluene, acetone, cis-1,2-DCE, dibromochloromethane, ethanol, and trichlorofluoromethane. Note, this list includes cis-1,2-DCE, which is a PCE degradation by-product; its presence in site soil gas and indoor/outdoor air is likely to be site-related. Thus, because of the lack of toxicity data, the contribution from cis-1,2-DCE is not included in the cumulative risk estimates, and total risks could be higher.

Two chemicals—benzo(g,h,i)perylene and dimethyl phthalate—were detected in soil/sediment that do not have toxicity data. No background data are available for organic chemicals in

soil/sediment. However, neither chemical is a site-related contaminant; thus, the exclusion of these chemicals from the quantitative risk calculations is not an important limitation.

Five chemicals were detected in surface water and/or groundwater that do not have toxicity values, including dimethyl phthalate, ethane, ethene, methane, and methylcyclohexane. Two site wells (MW-5R and MW-06; RI Figure 3-2) provide information on groundwater concentrations upgradient from site impacts and are considered reference locations. Inspection of the measured groundwater concentrations shows ethane, ethene, and methane were analyzed in the two reference wells. Neither ethane nor ethene were detected in the reference wells, and the maximum methane concentration detected in the background wells (0.56 µg/L) is well below the maximum detected concentration in the site wells (15 µg/L). Even though these chemicals are not expected to be related to the release of PCE from the VAMC, these data suggest there may be a source of the chemicals within the site boundaries.

5.3.2 Uncertainties in Toxicity Factors

Toxicity information for many chemicals is often limited. Consequently, there are varying degrees of uncertainty associated with toxicity values (e.g., SF, IUR, RfD, and RfC). For example, uncertainties can arise from the following sources:

- Extrapolation from animal studies to humans
- Extrapolation from high to low dose
- Extrapolation from continuous to intermittent exposure
- Limited or inconsistent toxicity studies

In general, uncertainty in toxicity factors is one of the main sources of uncertainty in risk estimates at a site. Because of the conservative methods EPA uses in addressing the uncertainties in toxicological information, it is more likely the uncertainty will result in an overestimation, rather than an underestimation, of risk.

5.4 Risk Characterization

5.4.1 Uncertainties from Background Contributions

As noted previously, consistent with EPA risk assessment guidance (EPA 2002a), organic COPCs were evaluated quantitatively regardless of their potential source. Indoor air typically contains VOCs from consumer products and building materials, which makes it challenging to assess the contribution from VI (EPA 2011b). There were 29 COPCs identified for indoor air, but only four of these are expected to be site-related (PCE, TCE, and VC) or were investigated as potentially site-related (1,4-dioxane). **Table H.5-2** lists common household sources of background indoor air contamination for the indoor air COPCs (New Jersey Department of Environmental Protection [NJDEP] 2021). For example, benzene, ethylbenzene, and xylenes are often associated with gasoline and automobile exhaust; methylene chloride can be found in hairsprays and furniture polish; chloroform is usually attributable to typical indoor use of chlorinated water (e.g., during showering); cigarette smoke can release benzene, naphthalene, and xylenes; 1,4-dioxane can be

found in shampoos, liquid hand soaps, and laundry detergent; and isopropyl alcohol is an active ingredient of alcohol-based hand sanitizers.

EPA (2011b) compiled information on background indoor air concentrations from 15 indoor air quality studies conducted between 1990 and 2005. **Table H.5-3** summarizes typical background indoor air concentrations for the indoor air COPCs evaluated by EPA (2011b) and compares these values to the range of concentrations measured in indoor air at the site. As shown, the background levels tend to overlap with the range of concentrations measured in indoor air at the site.

In the risk calculations, non-cancer HIs and cancer risks are summarized separately across all COPCs and for the site-related COPCs to provide information on the fraction of the total risk that is likely to be site-attributable. However, even PCE and TCE, which are site-related COPCs, can have non-site-related sources, such as dry cleaning, metal degreasers, and adhesives and glues (**Table H.5-2**). Thus, even the site-related COPC exposures have the potential to be biased high because of the contribution from indoor background sources of PCE and TCE.

Chloroform is frequently detected in site groundwater (423 of 479 groundwater samples collected at the site reported detected concentrations of chloroform). Chloroform and other trihalomethanes, including bromodichloromethane and dibromochloromethane, are disinfection by-products commonly produced during the water chlorination process. Their presence in groundwater could potentially be associated with discharges of chlorinated water, such as during lawn irrigation or from buried leaking water supply or sewer lines (Ivahnenko and Zogorski 2006). As noted above, their presence in indoor air is often because of indoor water uses (e.g., showering). Inspection of the groundwater data for two wells upgradient of the site (MW-05R and MW-06) shows that chloroform was detected in all upgradient groundwater samples, which indicates the presence of chloroform in groundwater is likely attributable to anthropogenic, but not site-related, sources.

5.4.2 Uncertainties in Cumulative Risk

Because risk estimates for a chemical are derived by combining uncertain estimates of exposure and toxicity (see above), risk estimates for each chemical are more uncertain than either the exposure estimate, or the toxicity estimate alone. Additional uncertainty arises from the issue of how to combine risk estimates across different chemicals. In some cases, the effects caused by one chemical do not influence the effects caused by other chemicals. In other cases, the effects of one chemical may interact with effects of other chemicals, causing responses that are approximately additive, greater than additive (synergistic), or less than additive (antagonistic). In most cases, available toxicity data are not sufficient to define what type of interaction is expected; therefore, EPA generally assumes effects are additive for non-carcinogens that act on the same target tissue and for all carcinogens (all target tissues). Because documented cases of synergistic interactions between chemicals are relatively uncommon at levels of exposure that are environmentally relevant, this approach is likely to be reasonable for most chemicals.

For non-carcinogens, summing HQ values across different chemicals is properly applied only to compounds that induce the same effect by the same mechanism of action. Consequently, summation of HQ values for compounds that are not expected to include the same type of effects or that do not act by the same mechanisms could overestimate the potential for effects. For

example, as shown in **Table H.3-2**, PCE exposures cause nervous and ocular effects, while TCE causes developmental effects and issues for the heart, immune system, and kidneys. Thus, summation of HQs across both PCE and TCE will tend to overestimate the cumulative HI. All the non-cancer HI values in this report that sum HQ values across multiple COPCs are likely to overestimate the true level of human health non-cancer hazard. Even still, as discussed in the risk results, PCE and TCE were identified as non-cancer risk drivers, meaning that HQ values for the individual chemicals were greater than 1.

Section 6
Risk Conclusions

Historical disposal of PCE from a dry-cleaning facility in Building 7 on the VAMC campus has resulted in contamination of groundwater beneath the VAMC campus and in downgradient areas. PCE and its degradation products have been identified in groundwater at the site. Contaminated groundwater is present in shallow groundwater and in seeps and springs that daylight in the ESS residential neighborhood. Humans may come into contact with contaminated site media, including groundwater (non-potable under current conditions and possibly potable in the future), shallow soil, and seep/spring surface water and sediment. PCE and its degradation products are volatile chemicals. Volatile chemicals in groundwater can volatilize into the interstitial spaces in the soil and can migrate upward and be released at the soil surface. If overlying buildings are present, chemical vapors can contaminate indoor air because of VI. Exposures to volatile chemicals have the potential to cause a range of non-cancer and cancer effects in humans. Residents, daycare children, students, and workers within the contaminated groundwater area could be at risk of adverse health effects if excessive exposure to contaminated environmental media were to occur.

In the HHRA, conservative risk-based screening levels were used to identify COPCs. Health protective assumptions were used to estimate non-cancer hazards and cancer risks from exposures to COPCs for a range of human receptor populations. While the risk assessment evaluated exposures to all COPCs, only two volatiles are identified as being the main site-related chemicals of concern (COCs)—PCE and TCE. Although 1,4-dioxane contributes to total indoor air risks, as discussed in Section 5.3.1.5 of the RI, inspection of the groundwater data shows 1,4-dioxane was only detected sporadically in the ESS area and not at the locations with the highest PCE concentrations in the groundwater plume closer to the VAMC campus. Thus, the presence of 1,4-dioxane in indoor air, like most of the volatile COPCs, does not appear to originate from the site and is likely because of interior background sources.

Table H.6-1 summarizes the overall risk conclusions. The following sections summarize the outcome of the risk assessment for human exposures to site-related contamination in site media.

Minor Exposure Media and Pathways

The risk evaluation showed that the following exposure scenarios would not result in unacceptable risks:

- Exposures to chemicals in soil, sediment, surface water (i.e., seeps/springs and daylighting groundwater), and outdoor air for all receptor populations and all exposure scenarios
- Residential and outdoor worker exposures to chemicals in shallow groundwater during digging activities, such as a resident digging in a garden or an outdoor maintenance worker performing sprinkler line maintenance
- Inhalation exposures to volatiles in irrigation water (derived from deep wells), based on the expectation that volatiles would rapidly dissipate in outdoor air

- Consumption of homegrown produce that has been irrigated with seep/spring water, because accumulation of PCE and its daughter products into homegrown produce is unlikely
- Construction worker exposures to volatiles in trench air derived from shallow groundwater and/or soil gas
- Student and teacher exposures to indoor air inside schools

Hypothetical Future Exposures to Potable Groundwater

While deep groundwater is not currently being used for potable use near the site, if contaminated site groundwater were used as a potable source in the future, unacceptable exposures have the potential to occur because of elevated concentrations of PCE. Two wells—MW-03R located near the VAMC campus and MW-13L in the ESS neighborhood—showed unacceptable residential risks from PCE, primarily because of inhalation exposures during domestic water use (e.g., during showering) and ingestion of drinking water. Appropriate mitigation measures should be taken to ensure contaminated groundwater (either deep or shallow) is not used as potable water in the future.

Indoor Air Exposures at Residential Properties

The risk evaluation of potential exposures to COPCs in indoor air shows that cumulative hazards/risks are biased high because of the contribution of non-detect COPCs with inadequate MDLs. Twelve residential properties have an RME non-cancer HI greater than 1 and/or an RME cancer risk greater than 1E-04 (when based on detected chemicals). However, review of the list of risk drivers shows many of the volatile chemicals identified are not site-related, which suggests there are other indoor sources present inside many of these residences. If risk estimates are restricted to detected site-related COPCs only, only five properties (0040-H, 0051-H, 0054-H, 0059-H, and 0197-H) have potentially unacceptable exposures.

Inspection of the indoor air datasets and collocated information on soil gas, outdoor ambient air, and groundwater for these five residential properties indicate the VI pathway is likely complete at nearly all properties. However, other indoor sources of both site-related COCs (PCE and TCE) and non-site-related volatiles were also noted at several properties. For Property 0040-H, indoor air concentrations of PCE and TCE were above the Tier 1 RAL and determined to primarily be due to VI; interim measures have been taken at this property to mitigate exposures. For Property 0051-H, floor cracks were sealed to minimize the potential for VI. For both Property 0040-H and Property 0051-H, the risk estimates shown in **Table H.4-6** are based on pre-mitigation conditions. For Property 0054-H, pressure cycling results indicate elevated exposures were because of indoor sources and not VI. For Property 0059-H, risks are being driven by a single historical sample collected near a floor drain; risk estimates based on the most recent (and more representative) indoor air results shows there are no unacceptable risks. Portable air filters were provided to Property 0197-H as an interim measure pending further investigation of a suspected indoor TCE source.

Despite the VI pathway being complete, with the exception of Property 0040-H and (potentially) Property 0197-H, there are no unacceptable human health risks from exposures to site-related

COCs (PCE and TCE) under current conditions for all residential properties that have been sampled.

Indoor Air Exposures at Daycares

Daycares are known to exist within the OU1 study area, including the daycare within one school, in VAMC Building 13, and on the University of Utah campus. Daycares may also be operating out of residential properties and churches in the study area.

Maximum indoor air concentrations within the school daycare (School 0045-S) and the daycare inside VAMC Building 13 did not result in unacceptable risks for daycare children.

In the HHRA, it was assumed that any residential property could operate as a daycare facility in the future. The risk estimates indicate there is the potential that daycare children could have slightly elevated exposures to site-related COCs inside a few residences within the ESS area if they become daycare facilities in the future. However, if risks are mitigated for residents, this will also be protective of exposures to daycare children.

Indoor Worker Exposures

Indoor air samples have been collected from five on-site VAMC buildings, including Buildings 6 and 7, which are closest to the suspected PCE source location. No indoor air data is available for commercial properties within the ESS area because there are very few commercial properties located in the ESS area. Measured data for residential properties within the ESS area was used as a surrogate for concentrations inside commercial properties.

Worker exposures to site-related COCs inside the VAMC buildings did not result in unacceptable risks. For Building 6, soil gas represents an ongoing potential source of VI for this building; however, indoor sources of PCE and TCE (e.g., battery and brake cleaners and lubricants) were also present. Subsequent indoor air sampling performed after these indoor sources were removed resulted in site-related non-cancer hazards less than 1 and RME cancer risk estimates below 1E-06.

For commercial properties in the ESS area, if commercial buildings have similar indoor air concentrations to the residential properties, there is the potential that indoor workers could have non-cancer hazards slightly higher than 1 because of site-related COCs inside a few buildings within the ESS area.

Unsampled Properties

Attempts have been made to conduct indoor air sampling at as many properties as possible within the ESS area, but there are unsampled properties within this area. The risk results described above for the properties with measured indoor air data provide the most applicable information to estimate what potential exposures might be inside unsampled properties within the ESS area. The risk estimates suggest that, while VI may be occurring inside the unsampled properties, the majority of these properties are likely to have indoor air exposures that are within EPA's acceptable risk ranges. However, it is possible there could be a few unsampled properties within the ESS area where VI exposures may result in unacceptable hazards. Section 4.4.4 describes the property characteristics where VI concerns have the potential to be significant. The presence of one or more of these property characteristics would tend to increase the potential for

unacceptable exposures because of VI. However, because each home is unique, property-specific sampling of indoor air concentrations would be needed to determine actual indoor exposures.

Section 7
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Figures

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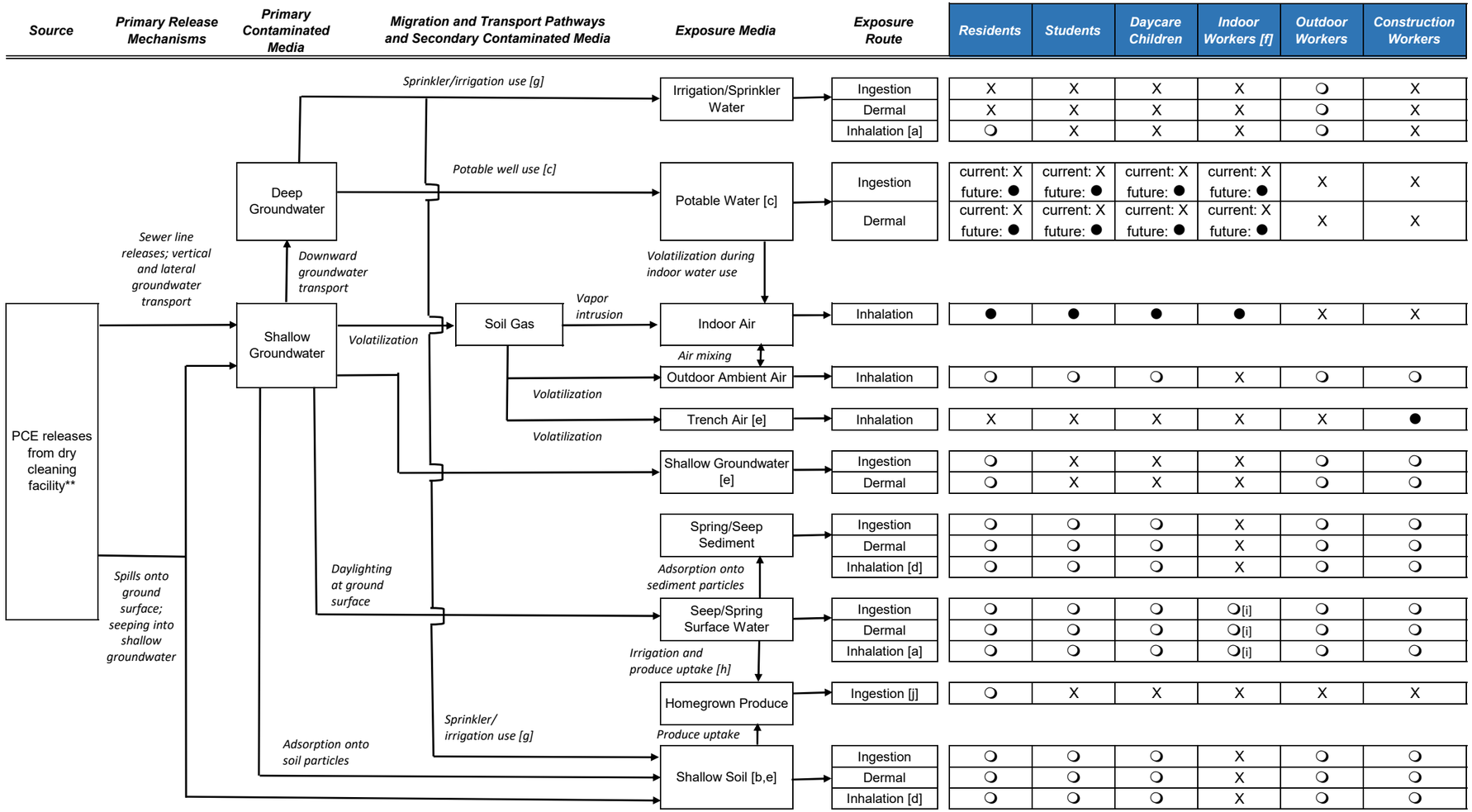
Figure H.2-1 Conceptual Site Exposure Model for Human Health

700 South 1600 East PCE Plume, Salt Lake City, Utah



LEGEND

X	Pathway is not complete; no evaluation required
❍	Pathway is or might be complete, but is likely to be minor
●	Pathway is or might be complete

**These releases likely occurred as disposal of PCE into the sanitary sewer line and releases from the sewer line into the surrounding soil because of line cracks and possibly from spills on the ground surface.

Footnotes:

[a] Due to volatilization from spring/seep surface water or sprinkler/irrigation water

[b] The expectation is that, outside of the seep/spring areas, shallow soil (0 to 10 feet bgs) contamination is likely to be negligible, with the possible exception of near Buildings 6 and 7 where historical spills may have occurred.

[c] There is no potable groundwater use under current conditions, but hypothetical future use will be evaluated

[d] Inhalation of airborne particulates and volatiles derived from shallow soil or spring/seep sediment

[e] During excavation or other digging activities (e.g., home sprinkler repair)

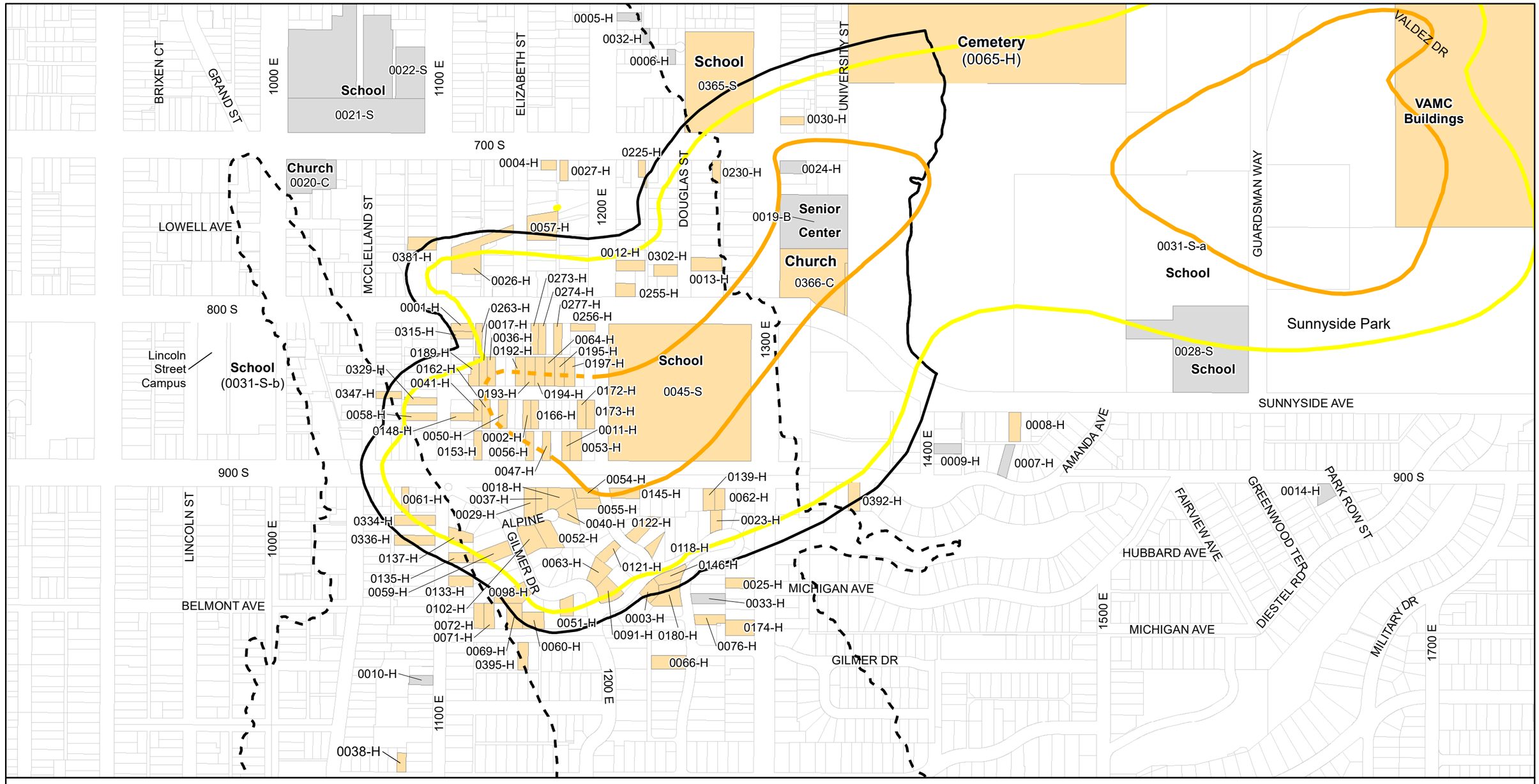
[f] Includes adult commercial/office workers and teachers

[g] Use of deep groundwater for irrigation is only expected in limited areas (e.g., University of Utah and Mount Olivet Cemetery). Deep groundwater is not used for residential property irrigation. While it is possible individuals near these properties could be exposed to volatiles in outdoor air derived from sprinklers and irrigation water, with the exception of university and cemetery outdoor maintenance workers, no direct contact exposures with sprinkler/irrigation water are expected to occur.

[h] Use of springs/seeps for irrigation is only expected for a subset of residential properties where springs/seeps are present.

[i] Several properties have sumps in their basements, which means that indoor workers could come into contact with sump water located inside properties.

[j] Homegrown produce ingestion is not expected to occur in non-residential settings.



Legend

- Parcel Boundary
- Parcel with Indoor Air Samples
- Parcel with Qualified 2015 Results
- 50-foot Depth to Groundwater
- 100 feet (lateral or vertical) from the 5 µg/L groundwater plume

PCE Isoconcentration Contours

- 5 µg/L
- 50 µg/L
- Dashed Line - Inferred Extent

OU = operable unit
PCE = tetrachloroethene

Notes:

1. Plume contours were developed using Leapfrog 3-dimensional visualization software to interpolate the most recent data from each sampling location. The contours represent a top-down view of the 3-dimensional extent of the plume as interpreted in the Leapfrog software.
2. Properties 0015-H and 0016-H are outside the map extent. Property 0015-H is located more than 2,500 feet to the south of the plume extent and property 0016-H is located more than 2,200 feet to the north of the plume extent.

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[2] Personius, S.F. and Scott, W.E. 2009. Surficial Geologic Map of the Salt Lake City Segment and Parts of Adjacent Segments of the Wasatch Fault Zone, Davis, Salt Lake, and Utah Counties, Utah

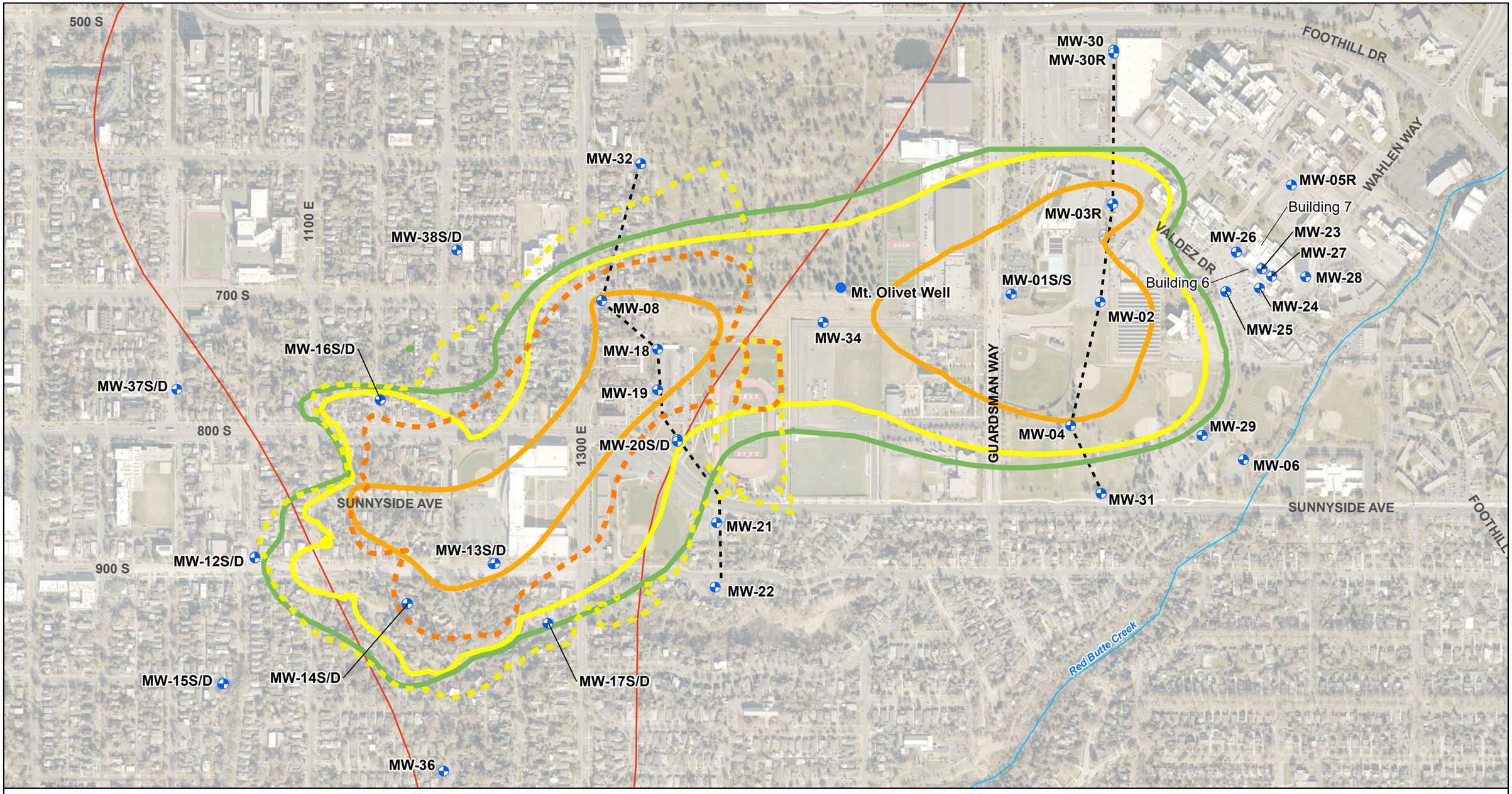
N W E S

0 250 500 Feet

CDM Smith

Figure H.4-1
OU1 Indoor Air Sampling
Spatial Coverage

700 South 1600 East PCE Plume
Salt Lake City, Utah



Legend

- Monitoring Well
- Irrigation Well
- Monitoring Well Transect Line
- Red Butte Creek
- Fault Line

PCE Contours (nominal)

- 50 µg/L
- 10 µg/L
- 5 µg/L

PCE Contours (95% UCL)

- 50 µg/L
- 10 µg/L

Notes
1. Proposed monitoring wells MW-07, MW-09, MW-10, MW-11, MW-33, and MW-35 were not installed.
2. Plume contours were developed using Leapfrog 3-dimensional visualization software to interpolate data from the Q2 2021 groundwater sampling event. The contours represent a top-down view of the 3-dimensional extent of the plume as interpreted in the Leapfrog software.

OU = operable unit
PCE = tetrachloroethene
TCE = trichloroethene
µg/L = micrograms per liter

N W E S

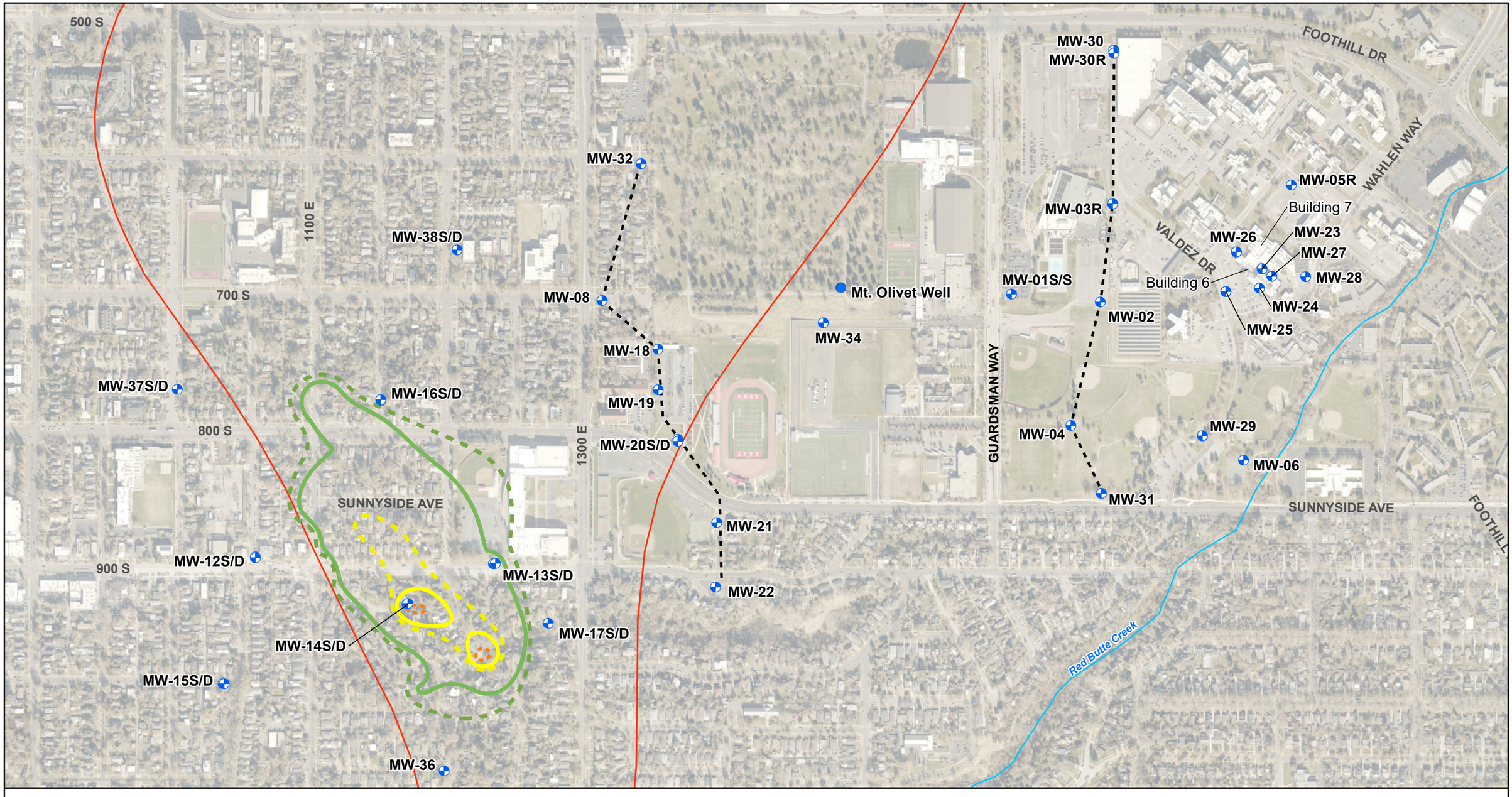
0 250 500 Feet

CDM Smith

Figure H.4-2
PCE Groundwater Plume Extents

OU1 Remedial Investigation Report
OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\FigL4-1_PCE_GW_Plume_Extent_bounded.mxd WAGNERA 7/29/2021



Legend

- Monitoring Well
- Irrigation Well
- Monitoring Well Transect Line
- Red Butte Creek
- Fault Line

TCE Contours (50% UCL)

- 2.5 µg/L
- 0.5 µg/L

TCE Contours (95% UCL)

- 5 µg/L
- 2.5 µg/L
- 0.5 µg/L

Notes

1. Proposed monitoring wells MW-07, MW-09, MW-10, MW-11, MW-33, and MW-35 were not installed.
2. Plume contours were developed using Leapfrog 3-dimensional visualization software to interpolate data from the Q2 2021 groundwater sampling event. The contours represent a top-down view of the 3-dimensional extent of the plume as interpreted in the Leapfrog software.

OU = operable unit
PCE = tetrachloroethene
TCE = trichloroethene
µg/L = micrograms per liter

N W E S

0 250 500 Feet

CDM Smith

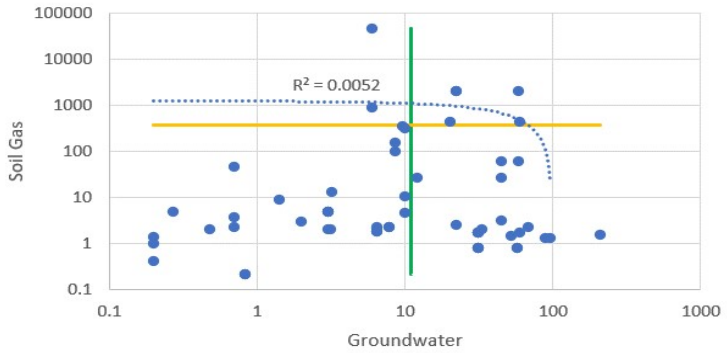
Figure H.4-3
TCE Groundwater Plume Extents

OU1 Remedial Investigation Report
OU1 700 South 1600 East PCE Plume
Salt Lake City, Utah

File Path: J:\238824_VA_Medical_Salt_Lake\MXD\Sampling_2021\RI_2021\FigL4-2_TCE_GW_Plume_Extents.mxd WAGNERA 8/2/2021

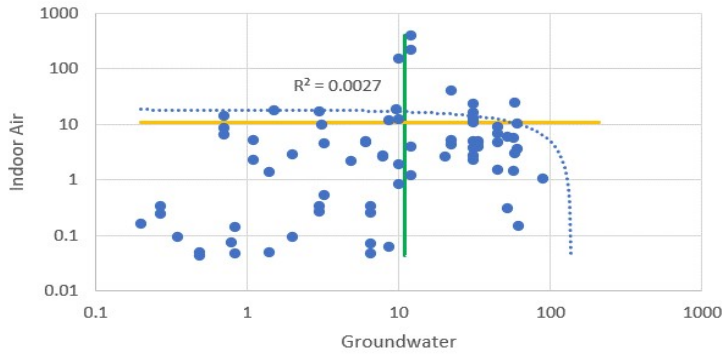
Figure H.4-4. Relationship in PCE Concentrations Between in Different Media
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Panel A: Groundwater versus Soil Gas



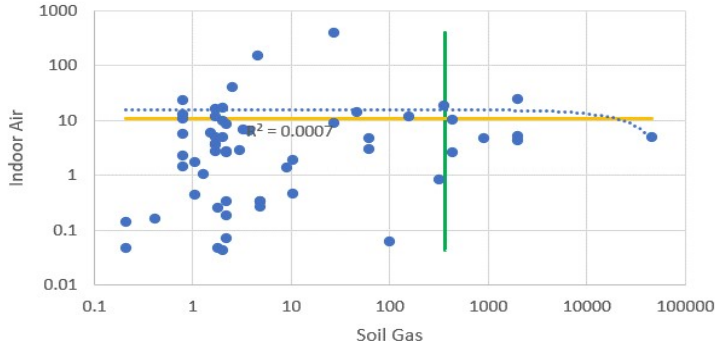
All groundwater concentrations of PCE are expressed as µg/L.
All soil gas concentrations of PCE are expressed as µg/m^3.
The residential groundwater VISL for PCE is indicated by the green line and the residential soil gas VISL for PCE is indicated by the yellow line.

Panel B: Groundwater versus Indoor Air



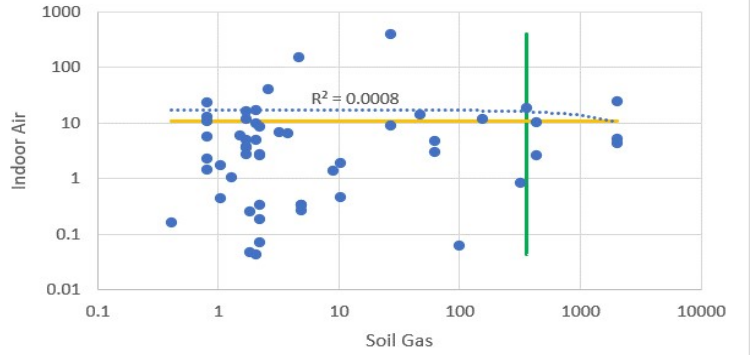
All groundwater concentrations of PCE are expressed as µg/L.
All indoor air concentrations of PCE are expressed as µg/m^3.
The residential groundwater VISL for PCE is indicated by the green line and the residential indoor air RSL for PCE is indicated by the yellow line.

Panel C: Soil Gas versus Indoor Air (all locations)



All indoor air and soil gas concentrations of PCE are expressed as µg/m^3.
The residential soil gas VISL for PCE is indicated by the green line and the residential indoor air RSL for PCE is indicated by the yellow line.

Panel D: Soil Gas versus Indoor Air (East Side Springs area only)

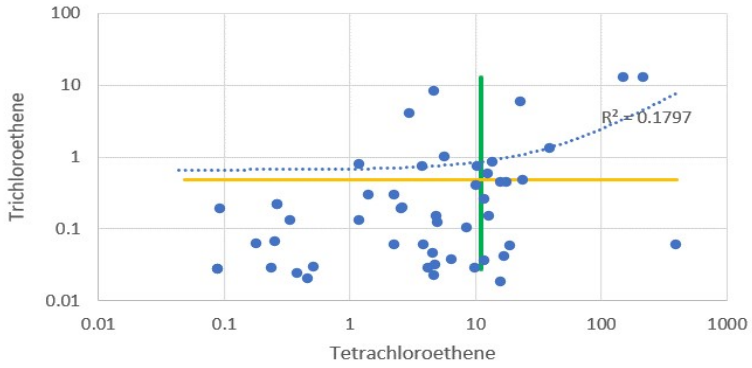


All indoor air and soil gas concentrations of PCE are expressed as µg/m^3.
The residential soil gas VISL for PCE is indicated by the green line and the residential indoor air RSL for PCE is indicated by the yellow line.

µg/L - micrograms per liter
µg/m^3 - micrograms per cubic meter
PCE - tetrachloroethene
RSL - regional screening level (based on a target HQ of 1 and target risk of 1E-06)
VISL - vapor intrusion screening level (based on a target HQ of 1 and target risk of 1E-06)

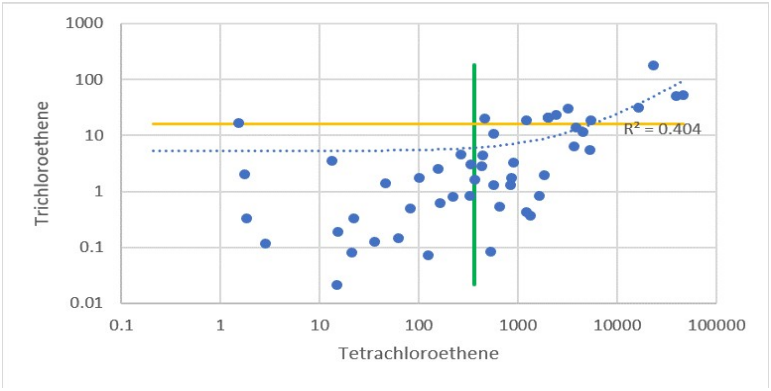
Figure H.4-5. Relationship Between PCE and TCE Concentrations in Different Media
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Panel A: Indoor Air



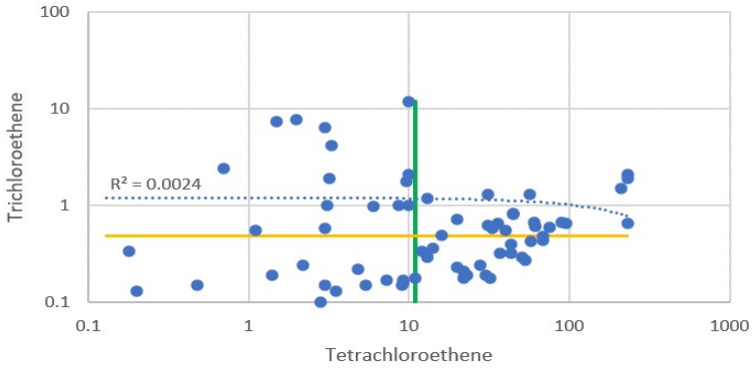
All indoor air concentrations are expressed as µg/m^3.
The residential indoor air RSL for PCE is indicated by the green line and for TCE by the yellow line.

Panel B: Soil Gas



All soil gas concentrations are expressed as µg/m^3.
The residential indoor air VISL for PCE is indicated by the green line and for TCE by the yellow line.

Panel C: Groundwater



All groundwater concentrations are expressed as µg/L.
The residential groundwater VISL for PCE is indicated by the green line and for TCE by the yellow line.

µg/L - micrograms per liter
µg/m^3 - micrograms per cubic meter
PCE - tetrachloroethene
RSL - regional screening level (based on a target HQ of 1 and target risk of 1E-06)
TCE - trichloroethene
VISL - vapor intrusion screening level (based on a target HQ of 1 and target risk of 1E-06)

Tables

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TABLE H.2-1
GROUNDWATER COPC SELECTION FOR PROTECTION OF HUMAN HEALTH
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Summary Statistics							SL (µg/L)	COPC Selection					
		No. of Samples	No. Detected	Detection Frequency	Range of DLs (µg/L)	Mean DL (µg/L)	Min. Conc. (µg/L)	Max. Conc. (µg/L)		Is Max. Det. Conc. > SL?	Is Mean DL > SL?	Chemical Detected, No SL?	Chemical ND, No SL?	Is Chemical a COPC?	Type of Evaluation
1,1,1-TRICHLOROETHANE	71-55-6	479	115	24%	0.057-0.5	0.09	0.09	0.99	742	N	--	N	--	N	--
1,1,2,2-TETRACHLOROETHANE	79-34-5	479	0	0%	0.09-0.55	0.11	ND	ND	0.076	--	Y	--	N	Y	Qual.1
1,1,2-TRICHLOROETHANE	79-00-5	479	0	0%	0.071-0.51	0.10	ND	ND	0.041	--	Y	--	N	Y	Qual.1
1,1,2-TRICHLOROTRIFLUOROETHANE	76-13-1	479	0	0%	0.061-0.75	0.15	ND	ND	24.2	--	N	--	N	N	--
1,1'-BIPHENYL	92-52-4	124	0	0%	0.64-4.5	2.20	ND	ND	0.083	--	Y	--	N	Y	Qual.1
1,1-DICHLOROETHANE	75-34-3	479	13	3%	0.053-0.5	0.09	0.1	0.19	2.8	N	N	N	--	N	--
1,1-DICHLOROETHENE	75-35-4	479	55	11%	0.081-0.5	0.10	0.11	0.29	19.5	N	--	N	--	N	--
1,2,3-TRICHLOROBENZENE	87-61-6	479	0	0%	0.076-0.75	0.14	ND	ND	0.7	--	N	--	N	N	--
1,2,4,5-TETRACHLOROBENZENE	95-94-3	124	0	0%	0.83-4.2	2.21	ND	ND	0.017	--	Y	--	N	Y	Qual.1
1,2,4-TRICHLOROBENZENE	120-82-1	479	0	0%	0.059-0.76	0.14	ND	ND	0.4	--	N	--	N	N	--
1,2,4-TRIMETHYLBENZENE	95-63-6	396	15	4%	0.11-0.54	0.11	0.12	1.2	5.6	N	N	N	--	N	--
1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	479	0	0%	0.1-1.2	0.24	ND	ND	0.00033	--	Y	--	N	Y	Qual.1
1,2-DIBROMOETHANE	106-93-4	479	0	0%	0.047-0.52	0.09	ND	ND	0.0075	--	Y	--	N	Y	Qual.1
1,2-DICHLOROBENZENE	95-50-1	479	0	0%	0.036-0.5	0.09	ND	ND	30	--	N	--	N	N	--
1,2-DICHLOROETHANE	107-06-2	479	0	0%	0.057-0.5	0.10	ND	ND	0.17	--	N	--	N	N	--
1,2-DICHLOROPROPANE	78-87-5	479	0	0%	0.054-0.5	0.10	ND	ND	0.82	--	N	--	N	N	--
1,3,5-TRIMETHYLBENZENE	108-67-8	396	4	1%	0.12-0.62	0.12	0.17	0.25	6	N	N	N	--	N	--
1,3-DICHLOROBENZENE	95-50-1	479	0	0%	0.051-0.54	0.10	ND	ND	NA	--	N	--	Y	Y	Qual.2
1,3-DICHLOROPROPYLENE	542-75-6	83	0	0%	0.1-0.1	0.10	ND	ND	0.47	--	N	--	N	N	--
1,4-DICHLOROBENZENE	106-46-7	479	0	0%	0.047-0.5	0.10	ND	ND	0.48	--	N	--	N	N	--
1,4-DIOXANE	123-91-1	218	8	4%	0.15-7.1	0.36	0.18	2.7	0.46	Y	N	N	--	Y	Quant.
2,3,4,6-TETRACHLOROPHENOL	58-90-2	124	0	0%	0.65-5.3	2.22	ND	ND	24	--	N	--	N	N	--
2,4,5-TRICHLOROPHENOL	95-95-4	124	0	0%	0.75-6.7	2.26	ND	ND	120	--	N	--	N	N	--
2,4,6-TRICHLOROPHENOL	88-06-2	124	0	0%	0.62-5.3	2.21	ND	ND	1.2	--	Y	--	N	Y	Qual.1
2,4-DICHLOROPHENOL	120-83-2	124	0	0%	0.71-4.1	2.19	ND	ND	4.6	--	N	--	N	N	--
2,4-DIMETHYLPHENOL	105-67-9	124	0	0%	0.62-3.4	2.25	ND	ND	36	--	N	--	N	N	--
2,4-DINITROPHENOL	51-28-5	124	0	0%	0.73-4.1	2.13	ND	ND	3.9	--	N	--	N	N	--
2,4-DINITROTOLUENE	121-14-2	124	0	0%	0.53-5.4	2.22	ND	ND	0.24	--	Y	--	N	Y	Qual.1
2,6-DINITROTOLUENE	606-20-2	124	0	0%	0.74-5.2	2.20	ND	ND	0.049	--	Y	--	N	Y	Qual.1
2-BUTANONE (MEK)	78-93-3	479	24	5%	0.76-12	2.15	1.9	54	560	N	N	N	--	N	--
2-CHLORONAPHTHALENE	91-58-7	124	0	0%	0.65-4.5	2.20	ND	ND	75	--	N	--	N	N	--
2-CHLOROPHENOL	95-57-8	124	0	0%	0.76-4.7	2.19	ND	ND	9.1	--	N	--	N	N	--
2-HEXANONE	591-78-6	479	13	3%	0.58-12	2.20	2.8	12	3.8	Y	N	N	--	Y	Quant.
2-METHYLNAPHTHALENE	91-57-6	124	0	0%	0.76-4.6	2.20	ND	ND	3.6	--	N	--	N	N	--
2-METHYLPHENOL	95-48-7	124	0	0%	0.6-4.4	2.19	ND	ND	93	--	N	--	N	N	--
2-NITROANILINE	88-74-4	124	0	0%	0.54-5.3	2.18	ND	ND	19	--	N	--	N	N	--
2-NITROPHENOL	88-75-5	124	0	0%	0.85-5.7	2.25	ND	ND	NA	--	N	--	Y	Y	Qual.2
3,3'-DICHLOROBENZIDINE	91-94-1	124	0	0%	0.4-6.5	2.21	ND	ND	0.13	--	Y	--	N	Y	Qual.1
3-NITROANILINE	99-09-2	124	0	0%	0.81-5.7	2.20	ND	ND	NA	--	N	--	Y	Y	Qual.2
4,4'-DDD	72-54-8	77	0	0%	0.0047-0.0063	0.01	ND	ND	0.0063	--	N	--	N	N	--
4,4'-DDE	72-55-9	77	0	0%	0.0047-0.0063	0.01	ND	ND	0.046	--	N	--	N	N	--
4,4'-DDT	50-29-3	77	0	0%	0.0047-0.0063	0.01	ND	ND	0.23	--	N	--	N	N	--
4,6-DINITRO-2-METHYLPHENOL	534-52-1	124	0	0%	0.74-6.9	2.26	ND	ND	0.15	--	Y	--	N	Y	Qual.1
4-BROMOPHENYL PHENYL ETHER	101-55-3	124	0	0%	0.7-5.8	2.24	ND	ND	NA	--	N	--	Y	Y	Qual.2
4-CHLORO-3-METHYLPHENOL	59-50-7	124	0	0%	0.92-5.4	2.23	ND	ND	140	--	N	--	N	N	--
4-CHLOROANILINE	106-47-8	124	0	0%	0.7-6.8	3.52	ND	ND	0.37	--	Y	--	N	Y	Qual.1
4-CHLOROPHENYL PHENYL ETHER	7005-72-3	124	0	0%	0.53-3.6	2.18	ND	ND	NA	--	N	--	Y	Y	Qual.2
4-METHYL-2-PENTANONE (MIBK)	108-10-1	479	0	0%	0.46-12	2.15	ND	ND	630	--	N	--	N	N	--
4-METHYLPHENOL	106-44-5	124	0	0%	0.56-3.9	2.16	ND	ND	37	--	N	--	N	N	--
4-NITROANILINE	100-01-6	124	0	0%	0.67-6.7	2.24	ND	ND	3.8	--	N	--	N	N	--
4-NITROPHENOL	100-02-7	124	0	0%	0.59-7.3	2.30	ND	ND	NA	--	N	--	Y	Y	Qual.2

TABLE H.2-1
GROUNDWATER COPC SELECTION FOR PROTECTION OF HUMAN HEALTH
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Summary Statistics							SL (µg/L)	COPC Selection					
		No. of Samples	No. Detected	Detection Frequency	Range of DLs (µg/L)	Mean DL (µg/L)	Min. Conc. (µg/L)	Max. Conc. (µg/L)		Is Max. Det. Conc. > SL?	Is Mean DL > SL?	Chemical Detected, No SL?	Chemical ND, No SL?	Is Chemical a COPC?	Type of Evaluation
ACENAPHTHENE	83-32-9	124	0	0%	0.7-3.5	2.18	ND	ND	53	--	N	--	N	N	--
ACENAPHTHYLENE	208-96-8	124	0	0%	0.58-4.5	2.21	ND	ND	NA	--	N	--	Y	Y	Qual.2
ACETONE	67-64-1	479	91	19%	0.31-12	2.26	1.1	55	1800	N	--	N	--	N	--
ACETOPHENONE	98-86-2	124	0	0%	0.62-4.2	2.20	ND	ND	190	--	N	--	N	N	--
ALDRIN	309-00-2	77	0	0%	0.0047-0.0063	0.01	ND	ND	0.00092	--	Y	--	N	Y	Qual.1
ALPHA-BHC	319-84-6	77	0	0%	0.0047-0.0063	0.01	ND	ND	0.0072	--	N	--	N	N	--
ALUMINUM	7429-90-5	385	206	54%	1.1-100	18.61	1.6	65600	2000	Y	--	N	--	Y	Quant.
ANTHRACENE	120-12-7	124	0	0%	0.66-4.9	2.21	ND	ND	180	--	N	--	N	N	--
ANTIMONY	7440-36-0	385	5	1%	0.045-1.25	0.27	0.27	1.4	0.78	Y	N	N	--	Y	Quant.
ARSENIC	7440-38-2	385	334	87%	0.075-0.58	0.15	0.16	14	0.052	Y	--	N	--	Y	Quant.
ATRAZINE	1912-24-9	124	0	0%	0.53-3.3	2.10	ND	ND	0.3	--	Y	--	N	Y	Qual.1
BARIUM	7440-39-3	385	384	100%	0.024-2.8	0.41	21	641	380	Y	--	N	--	Y	Quant.
BENZALDEHYDE	100-52-7	124	0	0%	0.66-6.6	4.07	ND	ND	19	--	N	--	N	N	--
BENZENE	71-43-2	479	72	15%	0.054-0.5	0.10	0.11	20	0.46	Y	--	N	--	Y	Quant.
BENZO(A)ANTHRACENE	56-55-3	124	0	0%	0.76-5.2	2.20	ND	ND	0.03	--	Y	--	N	Y	Qual.1
BENZO(A)PYRENE	50-32-8	124	0	0%	0.66-3.3	2.30	ND	ND	0.025	--	Y	--	N	Y	Qual.1
BENZO(B)FLUORANTHENE	205-99-2	124	0	0%	0.74-4	2.43	ND	ND	0.25	--	Y	--	N	Y	Qual.1
BENZO(G,H,I)PERYLENE	191-24-2	124	0	0%	0.72-4.4	2.35	ND	ND	NA	--	N	--	Y	Y	Qual.2
BENZO(K)FLUORANTHENE	207-08-9	124	0	0%	0.83-4.1	2.40	ND	ND	2.5	--	N	--	N	N	--
BENZYL BUTYL PHTHALATE	85-68-7	124	1	1%	0.53-6.9	2.21	1.8	1.8	16	N	N	N	--	N	--
BERYLLIUM	7440-41-7	385	15	4%	0.027-0.32	0.10	0.055	4.8	2.5	Y	N	N	--	Y	Quant.
BETA-BHC	319-85-7	77	0	0%	0.0065-0.0089	0.01	ND	ND	0.025	--	N	--	N	N	--
BIS(2-CHLOROETHOXY)METHANE	111-91-1	124	0	0%	0.72-4.4	2.19	ND	ND	5.9	--	N	--	N	N	--
BIS(2-CHLOROETHYL) ETHER	111-44-4	124	0	0%	0.76-3.9	2.21	ND	ND	0.014	--	Y	--	N	Y	Qual.1
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	124	8	6%	0.78-6.4	2.28	4.2	150	5.6	Y	N	N	--	Y	Quant.
BIS-CHLOROISOPROPYL ETHER	39638-32-9	124	0	0%	0.72-5.8	2.25	ND	ND	NA	--	N	--	Y	Y	Qual.2
BROMOCHLOROMETHANE	74-97-5	479	0	0%	0.059-0.57	0.11	ND	ND	8.3	--	N	--	N	N	--
BROMODICHLOROMETHANE	75-27-4	479	258	54%	0.049-0.5	0.10	0.10	6	0.13	Y	--	N	--	Y	Quant.
BROMOFORM	75-25-2	479	3	1%	0.06-0.75	0.14	0.24	0.58	3.3	N	N	N	--	N	--
BROMOMETHANE	74-83-9	479	0	0%	0.079-0.82	0.15	ND	ND	0.75	--	N	--	N	N	--
CADMIUM	440-43-9_wate	385	13	3%	0.026-0.5	0.12	0.060	0.86	0.18	Y	N	N	--	Y	Quant.
CALCIUM	7440-70-2	385	385	100%	5.5-735	203.61	86700	940000	NA	--	--	Y	--	N	Bkg.
CAPROLACTAM	105-60-2	124	0	0%	0.54-7.7	4.02	ND	ND	990	--	N	--	N	N	--
CARBAZOLE	86-74-8	124	0	0%	0.65-5.2	2.20	ND	ND	NA	--	N	--	Y	Y	Qual.2
CARBON DISULFIDE	75-15-0	479	11	2%	0.049-1.2	0.22	0.07	0.35	81	N	N	N	--	N	--
CARBON TETRACHLORIDE	56-23-5	479	4	1%	0.057-0.5	0.10	0.08	0.12	0.415	N	N	N	--	N	--
CHLORIDE	16887-00-6	315	315	100%	500-25000	5046.35	26000	1280000	NA	--	--	Y	--	N	Bkg.
CHLOROBENZENE	108-90-7	479	0	0%	0.05-0.5	0.10	ND	ND	7.8	--	N	--	N	N	--
CHLOROETHANE	75-00-3	479	0	0%	0.078-1.3	0.24	ND	ND	830	--	N	--	N	N	--
CHLOROFORM	67-66-3	479	423	88%	0.096-0.5	0.10	0.13	13	0.22	Y	--	N	--	Y	Quant.
CHLOROMETHANE	74-87-3	479	23	5%	0.057-0.75	0.14	0.15	2	19	N	N	N	--	N	--
CHROMIUM	16065-83-1	385	346	90%	0.043-0.62	0.13	0.10	130	2200	N	--	N	--	N	--
CHRYSENE	218-01-9	124	0	0%	0.78-3.9	2.18	ND	ND	25	--	N	--	N	N	--
CIS-1,2-DICHLOROETHENE	156-59-2	505	137	27%	0-0.5	0.09	0.10	3.9	3.6	Y	--	N	--	Y	Quant.
CIS-1,3-DICHLOROPROPENE	542-75-6	479	0	0%	0.065-0.5	0.11	ND	ND	0.47	--	N	--	N	N	--
CIS-CHLORDANE	5103-71-9	77	0	0%	0.0047-0.0063	0.01	ND	ND	0.36	--	N	--	N	N	--
COBALT	7440-48-4	385	335	87%	0.011-0.5	0.11	0.060	39	0.6	Y	--	N	--	Y	Quant.
COPPER	7440-50-8	385	166	43%	0.054-1.25	0.40	0.25	116	80	Y	--	N	--	Y	Quant.
CYCLOHEXANE	110-82-7	83	0	0%	0.038-0.14	0.10	ND	ND	102	--	N	--	N	N	--
DELTA-BHC	319-86-8	77	0	0%	0.0065-0.0089	0.01	ND	ND	NA	--	N	--	Y	Y	Qual.2
DIBENZO(A,H)ANTHRACENE	53-70-3	124	0	0%	0.49-4.2	2.39	ND	ND	0.025	--	Y	--	N	Y	Qual.1

TABLE H.2-1
GROUNDWATER COPC SELECTION FOR PROTECTION OF HUMAN HEALTH
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Summary Statistics							SL (µg/L)	COPC Selection					
		No. of Samples	No. Detected	Detection Frequency	Range of DLs (µg/L)	Mean DL (µg/L)	Min. Conc. (µg/L)	Max. Conc. (µg/L)		Is Max. Det. Conc. > SL?	Is Mean DL > SL?	Chemical Detected, No SL?	Chemical ND, No SL?	Is Chemical a COPC?	Type of Evaluation
DIBENZOFURAN	132-64-9	124	0	0%	0.66-3.7	2.18	ND	ND	0.79	--	Y	--	N	Y	Qual.1
DIBROMOCHLOROMETHANE	124-48-1	479	4	1%	0.051-0.5	0.09	0.16	2.4	0.87	Y	N	N	--	Y	Quant.
DICHLORODIFLUOROMETHANE	75-71-8	479	4	1%	0.061-0.75	0.14	0.17	0.25	0.74	N	N	N	--	N	--
DIELDRIN	60-57-1	77	0	0%	0.0047-0.0063	0.01	ND	ND	0.0018	--	Y	--	N	Y	Qual.1
DIETHYL PHTHALATE	84-66-2	124	0	0%	0.53-3.7	2.16	ND	ND	1500	--	N	--	N	N	--
DIMETHYL PHTHALATE	131-11-3	124	4	3%	0.54-4.3	2.20	1.7	19	NA	--	N	Y	--	N	Bkg.
DI-N-BUTYLPHTHALATE	84-74-2	124	5	4%	0.71-5.2	2.18	1.1	1.9	90	N	N	N	--	N	--
DI-N-OCTYLPHTHALATE	117-84-0	124	0	0%	0.91-6.3	2.39	ND	ND	20	--	N	--	N	N	--
DISSOLVED OXYGEN	DISS_OXYGEN	246	246	100%	0-0	NA	50	9590	NA	--	--	Y	--	N	Bkg.
ENDOSULFAN I	959-98-8	77	0	0%	0.0074-0.01	0.01	ND	ND	10	--	N	--	N	N	--
ENDOSULFAN II	33213-65-9	77	0	0%	0.0047-0.0063	0.01	ND	ND	10	--	N	--	N	N	--
ENDOSULFAN SULFATE	1031-07-8	77	0	0%	0.0047-0.0063	0.01	ND	ND	11	--	N	--	N	N	--
ENDRIN	72-20-8	77	0	0%	0.0074-0.01	0.01	ND	ND	0.23	--	N	--	N	N	--
ENDRIN ALDEHYDE	7421-93-4	77	0	0%	0.0047-0.0063	0.01	ND	ND	NA	--	N	--	Y	Y	Qual.2
ENDRIN KETONE	53494-70-5	77	0	0%	0.0047-0.0063	0.01	ND	ND	NA	--	N	--	Y	Y	Qual.2
ETHANE	74-84-0	211	16	8%	0.32-0.32	0.32	0.33	8.8	NA	--	N	Y	--	N	Bkg.
ETHENE	74-85-1	211	27	13%	0.3-0.3	0.30	0.31	14	NA	--	--	Y	--	N	Bkg.
ETHYLBENZENE	100-41-4	479	30	6%	0.031-0.5	0.10	0.10	3.3	1.5	Y	N	N	--	Y	Quant.
FERROUS IRON	FE(FS)	243	243	100%	0-0	NA	0	1490	NA	--	--	Y	--	N	Bkg.
FLUORANTHENE	206-44-0	124	0	0%	0.72-4.8	2.21	ND	ND	80	--	N	--	N	N	--
FLUORENE	86-73-7	124	0	0%	0.67-3.9	2.19	ND	ND	29	--	N	--	N	N	--
GAMMA-BHC (LINDANE)	58-89-9	77	1	1%	0.0047-0.0063	0.01	0.012	0.012	0.012	N	N	N	--	N	--
HEPTACHLOR	76-44-8	77	0	0%	0.0065-0.0089	0.01	ND	ND	0.0014	--	Y	--	N	Y	Qual.1
HEPTACHLOR EPOXIDE	1024-57-3	77	0	0%	0.0047-0.0063	0.01	ND	ND	0.0014	--	Y	--	N	Y	Qual.1
HEXACHLORO-1,3-BUTADIENE	87-68-3	124	0	0%	0.69-3.4	2.18	ND	ND	0.14	--	Y	--	N	Y	Qual.1
HEXACHLOROBENZENE	118-74-1	124	0	0%	0.97-4.8	2.22	ND	ND	0.0098	--	Y	--	N	Y	Qual.1
HEXACHLOROCYCLOPENTADIENE	77-47-4	124	0	0%	0.77-3.9	2.15	ND	ND	0.0189	--	Y	--	N	Y	Qual.1
HEXACHLOROETHANE	67-72-1	124	0	0%	0.59-4.4	2.23	ND	ND	0.33	--	Y	--	N	Y	Qual.1
INDENO(1,2,3-CD)PYRENE	193-39-5	124	0	0%	0.62-4.1	2.36	ND	ND	0.25	--	Y	--	N	Y	Qual.1
IRON	7439-89-6	385	278	72%	3.8-47.6	19.29	5.7	57500	1400	Y	--	N	--	Y	Quant.
ISOPHORONE	78-59-1	124	0	0%	0.63-4.3	2.18	ND	ND	78	--	N	--	N	N	--
ISOPROPYLBENZENE	98-82-8	479	3	1%	0.035-0.5	0.09	0.1	0.13	45	N	N	N	--	N	--
LEAD	7439-92-1	385	120	31%	0.013-0.36	0.07	0.050	91	15	Y	--	N	--	Y	Quant.
M,P-XYLENE	108-38-3	479	35	7%	0.048-1.1	0.19	0.11	4.7	19	N	N	N	--	N	--
MAGNESIUM	7439-95-4	385	385	100%	0.41-677	111.73	29300	124000	NA	--	--	Y	--	N	Bkg.
MANGANESE	39-96-5_non-d	385	360	94%	0.021-1.4	0.20	0.21	2770	43	Y	--	N	--	Y	Quant.
MERCURY	7487-94-7	385	11	3%	0.014-0.54	0.07	0.034	0.88	0.57	Y	N	N	--	Y	Quant.
METHANE	74-82-8	211	104	49%	0.17-0.17	0.17	0.17	15	NA	--	--	Y	--	N	Bkg.
METHOXYCHLOR	72-43-5	77	0	0%	0.047-0.063	0.05	ND	ND	3.7	--	N	--	N	N	--
METHYL ACETATE	79-20-9	479	0	0%	0.09-1.2	0.23	ND	ND	2000	--	N	--	N	N	--
METHYL TERT-BUTYL ETHER	1634-04-4	479	0	0%	0.056-0.66	0.12	ND	ND	14	--	N	--	N	N	--
METHYLCYLOHEXANE	108-87-2	83	4	5%	0.035-0.12	0.09	0.1	0.2	NA	--	N	Y	--	N	Bkg.
METHYLENE CHLORIDE	75-09-2	479	10	2%	0.062-2.5	0.44	0.11	0.44	11	N	N	N	--	N	--
NAPHTHALENE	91-20-3	124	0	0%	0.64-3.8	2.19	ND	ND	0.12	--	Y	--	N	Y	Qual.1
NICKEL	7440-02-0	385	355	92%	0.06-0.5	0.21	0.18	239	39	Y	--	N	--	Y	Quant.
NITRATE [AS N]	14797-55-8	21	17	81%	100-500	209.52	1100	4800	3200	Y	--	N	--	Y	Quant.
NITRATE/NITRITE	Nitrate/Nitrite	211	211	100%	10-250	58.67	197	7940	NA	--	--	Y	--	N	Bkg.
NITRATE/NITRITE [AS N]	N	75	74	99%	25-250	87.33	351	6910	NA	--	--	Y	--	N	Bkg.
NITRATE-NITRITE (AS N)	N	5	4	80%	1000-1000	1000.00	1200	3900	NA	--	--	Y	--	N	Bkg.
NITROBENZENE	98-95-3	124	0	0%	0.64-4.1	2.19	ND	ND	0.14	--	Y	--	N	Y	Qual.1
N-NITROSO-DI-N-PROPYLAMINE	621-64-7	124	0	0%	0.68-4.9	2.18	ND	ND	0.011	--	Y	--	N	Y	Qual.1

TABLE H.2-1
GROUNDWATER COPC SELECTION FOR PROTECTION OF HUMAN HEALTH
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Summary Statistics							SL (µg/L)	COPC Selection					
		No. of Samples	No. Detected	Detection Frequency	Range of DLs (µg/L)	Mean DL (µg/L)	Min. Conc. (µg/L)	Max. Conc. (µg/L)		Is Max. Det. Conc. > SL?	Is Mean DL > SL?	Chemical Detected, No SL?	Chemical ND, No SL?	Is Chemical a COPC?	Type of Evaluation
N-NITROSODIPHENYLAMINE	86-30-6	124	0	0%	0.69-5.3	2.22	ND	ND	12	--	N	--	N	N	--
O-XYLENE	95-47-6	479	27	6%	0.043-0.5	0.10	0.1	3.4	19	N	N	N	--	N	--
PENTACHLOROPHENOL	87-86-5	124	0	0%	0.73-6	2.21	ND	ND	0.041	--	Y	--	N	Y	Qual.1
PHENANTHRENE	85-01-8	124	0	0%	0.69-4.1	2.19	ND	ND	NA	--	N	--	Y	Y	Qual.2
PHENOL	108-95-2	124	0	0%	0.56-3.6	2.15	ND	ND	580	--	N	--	N	N	--
POTASSIUM	7440-09-7	385	385	100%	5.4-151	28.02	1510	12300	NA	--	--	Y	--	N	Bkg.
PYRENE	129-00-0	124	0	0%	0.85-4.2	2.20	ND	ND	12	--	N	--	N	N	--
SELENIUM	7782-49-2	385	315	82%	0.15-2.8	0.37	0.153	5.1	10	N	--	N	--	N	--
SILVER	7440-22-4	385	39	10%	0.011-0.5	0.11	0.05	1.1	9.4	N	--	N	--	N	--
SODIUM	7440-23-5	385	385	100%	8.3-1250	167.33	23900	792000	NA	--	--	Y	--	N	Bkg.
STYRENE	100-42-5	479	7	1%	0.031-1.2	0.22	0.24	1.1	120	N	N	N	--	N	--
SULFATE	14808-79-8	315	315	100%	650-26000	2805.40	49300	232000	NA	--	--	Y	--	N	Bkg.
TETRACHLOROETHENE	127-18-4	505	336	67%	0-3.8	0.20	0.13	230	4.1	Y	--	N	--	Y	Quant.
THALLIUM	7440-28-0	385	7	2%	0.054-0.5	0.14	0.080	0.35	0.02	Y	Y	N	--	Y	Quant.
TOLUENE	108-88-3	479	80	17%	0.048-0.5	0.10	0.090	18	110	N	--	N	--	N	--
TOXAPHENE	8001-35-2	77	0	0%	0.23-0.32	0.27	ND	ND	0.071	--	Y	--	N	Y	Qual.1
TRANS-1,2-DICHLOROETHENE	156-60-5	479	2	0%	0.062-0.5	0.10	0.1	0.2	6.8	N	N	N	--	N	--
TRANS-1,3-DICHLOROPROPENE	542-75-6	479	0	0%	0.049-0.57	0.12	ND	ND	0.47	--	N	--	N	N	--
TRANS-CHLORDANE	5103-74-2	77	0	0%	0.0047-0.0063	0.01	ND	ND	1	--	N	--	N	N	--
TRICHLOROETHENE	79-01-6	505	210	42%	0-0.5	0.09	0.1	12	0.28	Y	--	N	--	Y	Quant.
TRICHLOROFLUOROMETHANE	75-69-4	479	9	2%	0.038-0.75	0.14	0.17	0.28	520	N	N	N	--	N	--
VANADIUM	7440-62-2	385	346	90%	0.026-1.8	0.36	0.26	78	8.6	Y	--	N	--	Y	Quant.
VINYL ACETATE	108-05-4	396	0	0%	0.25-1.2	0.25	ND	ND	41	--	N	--	N	N	--
VINYL CHLORIDE	75-01-4	479	0	0%	0.054-0.58	0.12	ND	ND	0.019	--	Y	--	N	Y	Qual.1
ZINC	7440-66-6	385	168	44%	0.13-25	4.75	0.96	1350	600	Y	--	N	--	Y	Quant.

Notes:

Bkg. Background analysis for detected analytes with no screening levels
CAS - chemical abstracts service
conc. - concentration
COPC - chemical of potential concern
Det. - detect
DL - detection limit
max. - maximum
µg/L - micrograms per liter
N - no
NC - not calculated
ND - non-detect
No. - number
Qual.1 - qualitative analysis for infrequently detected analytes with insufficient detection limits
Qual.2 - qualitative analysis for non-detected analytes with no screening levels
Quant. - quantitative
SL - screening level
Y - yes

TABLE H.2-2
SURFACE WATER COPC SELECTION FOR PROTECTION OF HUMAN HEALTH
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Summary Statistics							SL (µg/L)	COPC Selection					
		No. of Samples	No. Detected	Detection Frequency	Range of DLs (µg/L)	Mean DL (µg/L)	Min. Conc. (µg/L)	Max. Conc. (µg/L)		Is Max. Det. Conc. > SL?	Is Mean DL > SL?	Chemical Detected, No SL?	Chemical ND, No SL?	Is Chemical a COPC?	Type of Evaluation
1,1,1-TRICHLOROETHANE	71-55-6	100	47	47%	0.057-0.17	0.09	0.09	1.1	800	N	--	N	--	N	--
1,1,2,2-TETRACHLOROETHANE	79-34-5	100	0	0%	0.097-0.19	0.11	ND	ND	0.076	--	Y	--	N	Y	Qual.1
1,1,2-TRICHLOROETHANE	79-00-5	100	0	0%	0.085-0.14	0.10	ND	ND	0.041	--	Y	--	N	Y	Qual.1
1,1,2-TRICHLOROTRIFLUOROETHANE	76-13-1	100	0	0%	0.11-0.34	0.15	ND	ND	1000	--	N	--	N	N	--
1,1'-BIPHENYL	92-52-4	38	0	0%	0.32-5.4	2.34	ND	ND	0.083	--	Y	--	N	Y	Qual.1
1,1-DICHLOROETHANE	75-34-3	100	2	2%	0.06-0.13	0.08	0.11	0.13	2.8	N	N	N	--	N	--
1,1-DICHLOROETHENE	75-35-4	100	5	5%	0.081-0.21	0.10	0.12	0.27	28	N	N	N	--	N	--
1,2,3-TRICHLOROBENZENE	87-61-6	100	0	0%	0.076-0.23	0.13	ND	ND	0.7	--	N	--	N	N	--
1,2,4,5-TETRACHLOROBENZENE	95-94-3	38	0	0%	0.27-5.4	2.31	ND	ND	0.017	--	Y	--	N	Y	Qual.1
1,2,4-TRICHLOROBENZENE	120-82-1	100	0	0%	0.059-0.23	0.12	ND	ND	0.4	--	N	--	N	N	--
1,2,4-TRIMETHYLBENZENE	95-63-6	45	0	0%	0.11-0.11	0.11	ND	ND	5.6	--	N	--	N	N	--
1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	100	0	0%	0.1-0.38	0.18	ND	ND	0.00033	--	Y	--	N	Y	Qual.1
1,2-DIBROMOETHANE	106-93-4	100	0	0%	0.047-0.21	0.08	ND	ND	0.0075	--	Y	--	N	Y	Qual.1
1,2-DICHLOROBENZENE	95-50-1	100	0	0%	0.036-0.23	0.08	ND	ND	30	--	N	--	N	N	--
1,2-DICHLOROETHANE	107-06-2	100	0	0%	0.07-0.11	0.09	ND	ND	0.17	--	N	--	N	N	--
1,2-DICHLOROPROPANE	78-87-5	100	0	0%	0.054-0.18	0.08	ND	ND	0.82	--	N	--	N	N	--
1,3,5-TRIMETHYLBENZENE	108-67-8	45	0	0%	0.12-0.12	0.12	ND	ND	6	--	N	--	N	N	--
1,3-DICHLOROBENZENE	541-73-1	100	0	0%	0.057-0.15	0.09	ND	ND	NA	--	N	--	Y	Y	Qual.2
1,3-DICHLOROPROPYLENE	542-75-6	27	0	0%	0.1-0.1	0.10	ND	ND	0.47	--	N	--	N	N	--
1,4-DICHLOROBENZENE	106-46-7	100	0	0%	0.066-0.13	0.09	ND	ND	0.48	--	N	--	N	N	--
1,4-DIOXANE	123-91-1	38	4	11%	0.15-0.99	0.39	0.2	0.35	0.46	N	--	N	--	N	--
2,3,4,6-TETRACHLOROPHENOL	58-90-2	38	0	0%	0.33-5.4	2.32	ND	ND	24	--	N	--	N	N	--
2,4,5-TRICHLOROPHENOL	95-95-4	38	0	0%	0.33-5.4	2.30	ND	ND	120	--	N	--	N	N	--
2,4,6-TRICHLOROPHENOL	88-06-2	38	0	0%	0.32-5.4	2.31	ND	ND	1.2	--	Y	--	N	Y	Qual.1
2,4-DICHLOROPHENOL	120-83-2	38	0	0%	0.4-5.4	2.32	ND	ND	4.6	--	N	--	N	N	--
2,4-DIMETHYLPHENOL	105-67-9	38	0	0%	0.37-5.6	2.43	ND	ND	36	--	N	--	N	N	--
2,4-DINITROPHENOL	51-28-5	38	0	0%	0.88-5.4	2.33	ND	ND	3.9	--	N	--	N	N	--
2,4-DINITROTOLUENE	121-14-2	38	0	0%	0.29-5.4	2.31	ND	ND	0.24	--	Y	--	N	Y	Qual.1
2,6-DINITROTOLUENE	606-20-2	38	0	0%	0.35-5.4	2.34	ND	ND	0.049	--	Y	--	N	Y	Qual.1
2-BUTANONE (MEK)	78-93-3	100	0	0%	0.84-2.5	1.61	ND	ND	560	--	N	--	N	N	--
2-CHLORONAPHTHALENE	91-58-7	38	0	0%	0.28-5.4	2.32	ND	ND	75	--	N	--	N	N	--
2-CHLOROPHENOL	95-57-8	38	0	0%	0.38-5.4	2.29	ND	ND	9.1	--	N	--	N	N	--
2-HEXANONE	591-78-6	100	0	0%	0.58-2.5	1.45	ND	ND	3.8	--	N	--	N	N	--
2-METHYLNAPHTHALENE	91-57-6	38	0	0%	0.35-5.4	2.29	ND	ND	3.6	--	N	--	N	N	--
2-METHYLPHENOL	95-48-7	38	0	0%	0.36-5.4	2.31	ND	ND	93	--	N	--	N	N	--
2-NITROANILINE	88-74-4	38	0	0%	0.33-5.4	2.27	ND	ND	19	--	N	--	N	N	--
2-NITROPHENOL	88-75-5	38	0	0%	0.36-5.4	2.34	ND	ND	NA	--	N	--	Y	Y	Qual.2
3,3'-DICHLOROBENZIDINE	91-94-1	38	0	0%	0.83-5.4	2.29	ND	ND	0.13	--	Y	--	N	Y	Qual.1
3-NITROANILINE	99-09-2	38	0	0%	0.91-5.4	2.31	ND	ND	NA	--	N	--	Y	Y	Qual.2
4,4'-DDD	72-54-8	27	0	0%	0.0049-0.0061	0.01	ND	ND	0.0063	--	N	--	N	N	--
4,4'-DDE	72-55-9	27	0	0%	0.0049-0.0061	0.01	ND	ND	0.046	--	N	--	N	N	--
4,4'-DDT	50-29-3	27	0	0%	0.0049-0.0061	0.01	ND	ND	0.23	--	N	--	N	N	--
4,6-DINITRO-2-METHYLPHENOL	534-52-1	38	0	0%	0.58-5.4	2.32	ND	ND	0.15	--	Y	--	N	Y	Qual.1
4-BROMOPHENYL PHENYL ETHER	101-55-3	38	0	0%	0.37-5.4	2.34	ND	ND	NA	--	N	--	Y	Y	Qual.2
4-CHLORO-3-METHYLPHENOL	59-50-7	38	0	0%	0.43-5.4	2.30	ND	ND	140	--	N	--	N	N	--
4-CHLOROANILINE	106-47-8	38	0	0%	0.24-9.1	3.74	ND	ND	0.37	--	Y	--	N	Y	Qual.1
4-CHLOROPHENYL PHENYL ETHER	7005-72-3	38	0	0%	0.38-5.4	2.32	ND	ND	NA	--	N	--	Y	Y	Qual.2
4-METHYL-2-PENTANONE (MIBK)	108-10-1	100	0	0%	0.46-2.5	1.32	ND	ND	630	--	N	--	N	N	--
4-METHYLPHENOL	106-44-5	38	0	0%	0.42-5.4	2.27	ND	ND	37	--	N	--	N	N	--

TABLE H.2-2
SURFACE WATER COPC SELECTION FOR PROTECTION OF HUMAN HEALTH
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Summary Statistics							SL (µg/L)	COPC Selection					
		No. of Samples	No. Detected	Detection Frequency	Range of DLs (µg/L)	Mean DL (µg/L)	Min. Conc. (µg/L)	Max. Conc. (µg/L)		Is Max. Det. Conc. > SL?	Is Mean DL > SL?	Chemical Detected, No SL?	Chemical ND, No SL?	Is Chemical a COPC?	Type of Evaluation
4-NITROANILINE	100-01-6	38	0	0%	0.48-5.4	2.23	ND	ND	3.8	--	N	--	N	N	--
4-NITROPHENOL	100-02-7	38	0	0%	0.63-5.4	2.32	ND	ND	NA	--	N	--	Y	Y	Qual.2
ACENAPHTHENE	83-32-9	38	0	0%	0.36-5.4	2.34	ND	ND	53	--	N	--	N	N	--
ACENAPHTHYLENE	208-96-8	38	0	0%	0.34-5.4	2.30	ND	ND	NA	--	N	--	Y	Y	Qual.2
ACETONE	67-64-1	100	14	14%	0.31-2.6	1.40	2.8	18	1800	N	--	N	--	N	--
ACETOPHENONE	98-86-2	38	0	0%	0.44-5.4	2.31	ND	ND	190	--	N	--	N	N	--
ALDRIN	309-00-2	27	0	0%	0.0049-0.0061	0.01	ND	ND	0.00092	--	Y	--	N	Y	Qual.1
ALPHA-BHC	319-84-6	27	0	0%	0.0049-0.0061	0.01	ND	ND	0.0072	--	N	--	N	N	--
ALUMINUM	7429-90-5	47	27	57%	1.2-25	11.32	18.4	8230	2000	Y	--	N	--	Y	Quant.
ANTHRACENE	120-12-7	38	0	0%	0.38-5.4	2.32	ND	ND	180	--	N	--	N	N	--
ANTIMONY	7440-36-0	47	17	36%	0.051-0.25	0.21	0.252	3	0.78	Y	--	N	--	Y	Quant.
ARSENIC	7440-38-2	47	47	100%	0.1-0.125	0.11	0.408	66	0.052	Y	--	N	--	Y	Quant.
ATRAZINE	1912-24-9	38	0	0%	0.83-5.4	2.29	ND	ND	0.3	--	Y	--	N	Y	Qual.1
BARIUM	7440-39-3	47	47	100%	0.21-0.25	0.24	24.2	206	380	N	--	N	--	N	--
BENZALDEHYDE	100-52-7	38	0	0%	0.41-11	4.28	ND	ND	19	--	N	--	N	N	--
BENZENE	71-43-2	100	4	4%	0.083-0.12	0.10	0.13	0.50	0.46	Y	N	N	--	Y	Quant.
BENZO(A)ANTHRACENE	56-55-3	38	0	0%	0.17-5.4	2.30	ND	ND	0.03	--	Y	--	N	Y	Qual.1
BENZO(A)PYRENE	50-32-8	38	0	0%	0.19-5.4	2.73	ND	ND	0.025	--	Y	--	N	Y	Qual.1
BENZO(B)FLUORANTHENE	205-99-2	38	0	0%	0.17-5.6	2.97	ND	ND	0.25	--	Y	--	N	Y	Qual.1
BENZO(G,H,I)PERYLENE	191-24-2	38	0	0%	0.35-5.4	2.82	ND	ND	NA	--	N	--	Y	Y	Qual.2
BENZO(K)FLUORANTHENE	207-08-9	38	0	0%	0.23-5.4	3.00	ND	ND	2.5	--	Y	--	N	Y	Qual.1
BENZYL BUTYL PHTHALATE	85-68-7	38	0	0%	0.24-5.4	2.28	ND	ND	16	--	N	--	N	N	--
BERYLLIUM	7440-41-7	47	1	2%	0.05-0.1	0.06	1.9	1.9	2.5	N	N	N	--	N	--
BETA-BHC	319-85-7	27	0	0%	0.0068-0.0085	0.01	ND	ND	0.025	--	N	--	N	N	--
BIS(2-CHLOROETHOXY)METHANE	111-91-1	38	0	0%	0.42-5.4	2.31	ND	ND	5.9	--	N	--	N	N	--
BIS(2-CHLOROETHYL) ETHER	111-44-4	38	0	0%	0.39-5.4	2.31	ND	ND	0.014	--	Y	--	N	Y	Qual.1
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	38	3	8%	0.47-5.4	2.31	3.6	84	5.6	Y	N	N	--	Y	Quant.
BIS-CHLOROISOPROPYL ETHER	39638-32-9	38	0	0%	0.46-5.4	2.32	ND	ND	NA	--	N	--	Y	Y	Qual.2
BROMOCHLOROMETHANE	74-97-5	100	0	0%	0.059-0.26	0.10	ND	ND	8.3	--	N	--	N	N	--
BROMODICHLOROMETHANE	75-27-4	100	25	25%	0.068-0.13	0.09	0.09	0.68	0.13	Y	--	N	--	Y	Quant.
BROMOFORM	75-25-2	100	0	0%	0.06-0.15	0.13	ND	ND	3.3	--	N	--	N	N	--
BROMOMETHANE	74-83-9	100	0	0%	0.092-0.19	0.17	ND	ND	0.75	--	N	--	N	N	--
CADMIUM	440-43-9_wate	47	4	9%	0.054-0.1	0.09	0.06	2.5	0.18	Y	N	N	--	Y	Quant.
CALCIUM	7440-70-2	47	47	100%	5.5-250	105	27900	232000	NA	--	--	Y	--	N	Bkg.
CAPROLACTAM	105-60-2	38	0	0%	0.38-11	4.30	ND	ND	990	--	N	--	N	N	--
CARBAZOLE	86-74-8	38	0	0%	0.18-5.4	2.26	ND	ND	NA	--	N	--	Y	Y	Qual.2
CARBON DISULFIDE	75-15-0	100	2	2%	0.07-0.25	0.16	0.07	0.19	81	N	N	N	--	N	--
CARBON TETRACHLORIDE	56-23-5	100	0	0%	0.059-0.22	0.10	ND	ND	0.46	--	N	--	N	N	--
CHLORIDE	16887-00-6	47	47	100%	500-25000	5519	35200	473000	NA	--	--	Y	--	N	Bkg.
CHLOROBENZENE	108-90-7	100	0	0%	0.05-0.18	0.08	ND	ND	7.8	--	N	--	N	N	--
CHLOROETHANE	75-00-3	100	0	0%	0.08-0.27	0.18	ND	ND	830	--	N	--	N	N	--
CHLOROFORM	67-66-3	100	71	71%	0.1-0.15	0.11	0.11	6.3	0.22	Y	--	N	--	Y	Quant.
CHLOROMETHANE	74-87-3	100	0	0%	0.088-0.15	0.13	ND	ND	19	--	N	--	N	N	--
CHROMIUM	16065-83-1	47	40	85%	0.07-0.1	0.09	0.222	55	2200	N	--	N	--	N	--
CHRYSENE	218-01-9	38	0	0%	0.16-5.4	2.34	ND	ND	25	--	N	--	N	N	--
CIS-1,2-DICHLOROETHENE	156-59-2	100	42	42%	0.076-0.11	0.09	0.11	1.3	3.6	N	--	N	--	N	--
CIS-1,3-DICHLOROPROPENE	542-75-6	100	0	0%	0.065-0.2	0.12	ND	ND	0.47	--	N	--	N	N	--
CIS-CHLORDANE	5103-71-9	27	0	0%	0.0049-0.0061	0.01	ND	ND	0.36	--	N	--	N	N	--
COBALT	7440-48-4	47	40	85%	0.056-0.1	0.09	0.06	16	0.6	Y	--	N	--	Y	Quant.
COPPER	7440-50-8	47	37	79%	0.054-0.5	0.26	0.31	102	80	Y	--	N	--	Y	Quant.
CYCLOHEXANE	110-82-7	55	1	2%	0.09-0.27	0.15	0.11	0.11	1300	N	N	N	--	N	--
DELTA-BHC	319-86-8	27	0	0%	0.0068-0.0085	0.0075	ND	ND	NA	--	N	--	Y	Y	Qual.2

TABLE H.2-2
SURFACE WATER COPC SELECTION FOR PROTECTION OF HUMAN HEALTH
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Summary Statistics							SL (µg/L)	COPC Selection					
		No. of Samples	No. Detected	Detection Frequency	Range of DLs (µg/L)	Mean DL (µg/L)	Min. Conc. (µg/L)	Max. Conc. (µg/L)		Is Max. Det. Conc. > SL?	Is Mean DL > SL?	Chemical Detected, No SL?	Chemical ND, No SL?	Is Chemical a COPC?	Type of Evaluation
DIBENZO(A,H)ANTHRACENE	53-70-3	38	0	0%	0.29-5.4	3.0	ND	ND	0.025	--	Y	--	N	Y	Qual.1
DIBENZOFURAN	132-64-9	38	0	0%	0.35-5.4	2.31	ND	ND	0.79	--	Y	--	N	Y	Qual.1
DIBROMOCHLOROMETHANE	124-48-1	100	0	0%	0.057-0.21	0.09	ND	ND	0.87	--	N	--	N	N	--
DICHLORODIFLUOROMETHANE	75-71-8	100	0	0%	0.11-0.38	0.15	ND	ND	20	--	N	--	N	N	--
DIELDRIN	60-57-1	27	0	0%	0.0049-0.0061	0.0054	ND	ND	0.0018	--	Y	--	N	Y	Qual.1
DIETHYL PHTHALATE	84-66-2	38	1	3%	0.23-5.4	2.28	43	43	1500	N	N	N	--	N	--
DIMETHYL PHTHALATE	131-11-3	38	0	0%	0.35-5.4	2.3	ND	ND	NA	--	N	--	Y	Y	Qual.2
DI-N-BUTYLPHTHALATE	84-74-2	38	0	0%	0.23-5.4	2.31	ND	ND	90	--	N	--	N	N	--
DI-N-OCTYLPHTHALATE	117-84-0	38	0	0%	0.29-5.4	2.76	ND	ND	20	--	N	--	N	N	--
DISSOLVED OXYGEN	DISS_OXYGEN	10	10	100%	0-0	NA	6350	10880	NA	--	--	Y	--	N	Bkg.
ENDOSULFAN I	959-98-8	27	0	0%	0.0078-0.0098	0.0086	ND	ND	10	--	N	--	N	N	--
ENDOSULFAN II	33213-65-9	27	0	0%	0.0049-0.0061	0.0054	ND	ND	10	--	N	--	N	N	--
ENDOSULFAN SULFATE	1031-07-8	27	0	0%	0.0049-0.0061	0.01	ND	ND	11	--	N	--	N	N	--
ENDRIN	72-20-8	27	0	0%	0.0078-0.0098	0.01	ND	ND	0.23	--	N	--	N	N	--
ENDRIN ALDEHYDE	7421-93-4	27	0	0%	0.0049-0.0061	0.0054	ND	ND	NA	--	N	--	Y	Y	Qual.2
ENDRIN KETONE	53494-70-5	27	0	0%	0.0049-0.0061	0.0054	ND	ND	NA	--	N	--	Y	Y	Qual.2
ETHANE	74-84-0	10	0	0%	0.32-0.32	0.32	ND	ND	NA	--	N	--	Y	Y	Qual.2
ETHENE	74-85-1	10	0	0%	0.3-0.3	0.30	ND	ND	NA	--	N	--	Y	Y	Qual.2
ETHYLBENZENE	100-41-4	100	3	3%	0.031-0.13	0.07	0.08	0.15	1.5	N	N	N	--	N	--
FERROUS IRON	FE(FS)	10	10	100%	0-0	NA	0	250	NA	--	--	Y	--	N	Bkg.
FLOW	#N/A	8	8	100%	0-0	NA	1	462	NA	--	--	Y	--	N	Bkg.
FLUORANTHENE	206-44-0	38	0	0%	0.19-5.4	2.27	ND	ND	80	--	N	--	N	N	--
FLUORENE	86-73-7	38	0	0%	0.37-5.4	2.32	ND	ND	29	--	N	--	N	N	--
GAMMA-BHC (LINDANE)	58-89-9	27	1	4%	0.0049-0.0061	0.01	0.0065	0.0065	0.012	N	N	N	--	N	--
HEPTACHLOR	76-44-8	27	0	0%	0.0068-0.0085	0.0075	ND	ND	0.0014	--	Y	--	N	Y	Qual.1
HEPTACHLOR EPOXIDE	1024-57-3	27	0	0%	0.0049-0.0061	0.0054	ND	ND	0.0014	--	Y	--	N	Y	Qual.1
HEXACHLORO-1,3-BUTADIENE	87-68-3	38	0	0%	0.33-5.4	2.3	ND	ND	0.14	--	Y	--	N	Y	Qual.1
HEXACHLOROBENZENE	118-74-1	38	0	0%	0.36-5.4	2.3	ND	ND	0.0098	--	Y	--	N	Y	Qual.1
HEXACHLOROCYCLOPENTADIENE	77-47-4	38	0	0%	1.1-5.4	2.4	ND	ND	0.041	--	Y	--	N	Y	Qual.1
HEXACHLOROETHANE	67-72-1	38	0	0%	0.28-5.4	2.3	ND	ND	0.33	--	Y	--	N	Y	Qual.1
INDENO(1,2,3-CD)PYRENE	193-39-5	38	0	0%	0.26-5.4	2.9	ND	ND	0.25	--	Y	--	N	Y	Qual.1
IRON	7439-89-6	47	34	72%	4.1-25	9.06	5.42	13200	1400	Y	--	N	--	Y	Quant.
ISOPHORONE	78-59-1	38	0	0%	0.44-5.4	2.29	ND	ND	78	--	N	--	N	N	--
ISOPROPYLBENZENE	98-82-8	100	0	0%	0.056-0.16	0.08	ND	ND	45	--	N	--	N	N	--
LEAD	7439-92-1	47	35	74%	0.05-0.061	0.05	0.0761	127	15	Y	--	N	--	Y	Quant.
M,P-XYLENE	108-38-3	90	6	7%	0.048-0.21	0.12	0.1	0.74	19	N	N	N	--	N	--
M+P-XYLENES	108-38-3	10	0	0%	0.21-0.21	0.21	ND	ND	19	--	N	--	N	N	--
MAGNESIUM	7439-95-4	47	47	100%	5-250	65	5960	79700	NA	--	--	Y	--	N	Bkg.
MANGANESE	39-96-5_non-d	47	45	96%	0.06-0.25	0.12	0.166	351	43	Y	--	N	--	Y	Quant.
MERCURY	7487-94-7	47	2	4%	0.043-0.1	0.06	0.092	0.86	0.57	Y	N	N	--	Y	Quant.
METHANE	74-82-8	10	8	80%	0.17-0.17	0.17	0.18	1.1	NA	--	--	Y	--	N	Bkg.
METHOXYCHLOR	72-43-5	27	0	0%	0.049-0.061	0.05	ND	ND	3.7	--	N	--	N	N	--
METHYL ACETATE	79-20-9	100	0	0%	0.11-0.25	0.21	ND	ND	2000	--	N	--	N	N	--
METHYL TERT-BUTYL ETHER	1634-04-4	100	0	0%	0.067-0.18	0.10	ND	ND	14	--	N	--	N	N	--
METHYLCYLOHEXANE	108-87-2	55	0	0%	0.11-0.3	0.14	ND	ND	NA	--	N	--	Y	Y	Qual.2
METHYLENE CHLORIDE	75-09-2	100	0	0%	0.14-0.5	0.35	ND	ND	11	--	N	--	N	N	--
NAPHTHALENE	91-20-3	38	0	0%	0.39-5.4	2.30	ND	ND	0.12	--	Y	--	N	Y	Qual.1
NICKEL	7440-02-0	47	37	79%	0.06-0.25	0.12	0.166	26	39	N	--	N	--	N	--
NITRATE [AS N]	14797-55-8	10	10	100%	100-200	190	300	3500	3200	Y	--	N	--	Y	Quant.
NITRATE/NITRITE	Nitrate/Nitrite	10	10	100%	50-50	50	1730	4070	NA	--	--	Y	--	N	Bkg.
NITRATE/NITRITE [AS N]	N	27	27	100%	25-500	107	503	4450	NA	--	--	Y	--	N	Bkg.
NITROBENZENE	98-95-3	38	0	0%	0.38-5.4	2.3	ND	ND	0.14	--	Y	--	N	Y	Qual.1

TABLE H.2-2
SURFACE WATER COPC SELECTION FOR PROTECTION OF HUMAN HEALTH
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Summary Statistics							SL (µg/L)	COPC Selection					
		No. of Samples	No. Detected	Detection Frequency	Range of DLs (µg/L)	Mean DL (µg/L)	Min. Conc. (µg/L)	Max. Conc. (µg/L)		Is Max. Det. Conc. > SL?	Is Mean DL > SL?	Chemical Detected, No SL?	Chemical ND, No SL?	Is Chemical a COPC?	Type of Evaluation
N-NITROSO-DI-N-PROPYLAMINE	621-64-7	38	0	0%	0.47-5.4	2.3	ND	ND	0.011	--	Y	--	N	Y	Qual.1
N-NITROSODIPHENYLAMINE	86-30-6	38	0	0%	0.37-5.4	2.29	ND	ND	12	--	N	--	N	N	--
O-XYLENE	95-47-6	100	2	2%	0.061-0.12	0.08	0.1	0.24	19	N	N	N	--	N	--
PENTACHLOROPHENOL	87-86-5	38	0	0%	0.25-5.4	2.2	ND	ND	0.041	--	Y	--	N	Y	Qual.1
PHENANTHRENE	85-01-8	38	0	0%	0.32-5.4	2.3	ND	ND	NA	--	N	--	Y	Y	Qual.2
PHENOL	108-95-2	38	0	0%	0.38-5.4	2.28	ND	ND	580	--	N	--	N	N	--
POTASSIUM	7440-09-7	47	47	100%	8.1-25	13	1290	7030	NA	--	--	Y	--	N	Bkg.
PYRENE	129-00-0	38	0	0%	0.15-5.4	2.36	ND	ND	12	--	N	--	N	N	--
SELENIUM	7782-49-2	47	46	98%	0.15-1.4	0.42	0.249	4.2	10	N	--	N	--	N	--
SILVER	7440-22-4	47	9	19%	0.036-0.1	0.09	0.08	3	9.4	N	--	N	--	N	--
SODIUM	7440-23-5	47	47	100%	10.4-250	130	22300	233000	NA	--	--	Y	--	N	Bkg.
STYRENE	100-42-5	100	0	0%	0.044-0.25	0.15	ND	ND	120	--	N	--	N	N	--
SULFATE	14808-79-8	47	47	100%	130-26000	3597	19500	341000	NA	--	--	Y	--	N	Bkg.
TEMPERATURE	TEMP	10	10	100%	0-0	NA	10.5	15	NA	--	--	Y	--	N	Bkg.
TETRACHLOROETHENE	127-18-4	100	78	78%	0.077-0.75	0.13	0.13	82	4.1	Y	--	N	--	Y	Quant.
THALLIUM	7440-28-0	47	1	2%	0.054-0.1	0.09	1.5	1.5	0.02	Y	Y	N	--	Y	Quant.
TOLUENE	108-88-3	100	14	14%	0.048-0.13	0.08	0.1	1.7	110	N	--	N	--	N	--
TOXAPHENE	8001-35-2	27	0	0%	0.24-0.3	0.27	ND	ND	0.071	--	Y	--	N	Y	Qual.1
TRANS-1,2-DICHLOROETHENE	156-60-5	100	0	0%	0.075-0.16	0.11	ND	ND	6.8	--	N	--	N	N	--
TRANS-1,3-DICHLOROPROPENE	542-75-6	100	0	0%	0.049-0.2	0.11	ND	ND	0.47	--	N	--	N	N	--
TRANS-CHLORDANE	5103-74-2	27	0	0%	0.0049-0.0061	0.01	ND	ND	1	--	N	--	N	N	--
TRICHLOROETHENE	79-01-6	100	58	58%	0.07-0.1	0.084	0.09	4.6	0.28	Y	--	N	--	Y	Quant.
TRICHLOROFLUOROMETHANE	75-69-4	100	0	0%	0.074-0.29	0.12	ND	ND	520	--	N	--	N	N	--
VANADIUM	7440-62-2	47	46	98%	0.026-0.25	0.20	1.14	32.4	8.6	Y	--	N	--	Y	Quant.
VINYL ACETATE	108-05-4	45	0	0%	0.25-0.25	0.25	ND	ND	41	--	N	--	N	N	--
VINYL CHLORIDE	75-01-4	100	0	0%	0.081-0.22	0.14	ND	ND	0.019	--	Y	--	N	Y	Qual.1
ZINC	7440-66-6	47	18	38%	0.13-5	4.0	4.3	757	600	Y	--	N	--	Y	Quant.

Notes:

Bkg. Background analysis for detected analytes with no screening levels
CAS - chemical abstracts service
conc. - concentration
COPC - chemical of potential concern
Det. - detect
DL - detection limit
max. - maximum
µg/L - micrograms per liter
N - no
NC - not calculated
ND - non-detect
No. - number
Qual.1 - qualitative analysis for infrequently detected analytes with insufficient detection limits
Qual.2 - qualitative analysis for non-detected analytes with no screening levels
Quant. - quantitative
SL - screening level
Y - yes

TABLE H.2-3
SOIL GAS COPC SELECTION FOR PROTECTION OF HUMAN HEALTH
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Summary Statistics							SL (µg/m³)	COPC Selection					
		No. of Samples	No. Detected	Detection Frequency	Range of DLs (µg/m³)	Mean DL (µg/m³)	Min. Conc. (µg/m³)	Max. Conc. (µg/m³)		Is Max. Det. Conc. > SL?	Is Mean DL > SL?	Chemical Detected, No SL?	Chemical ND, No SL?	Is Chemical a COPC?	Type of Evaluation
1,1,1-TRICHLOROETHANE	71-55-6	110	57	52%	0.0047-24	1.0	0.032	40	17400	N	--	N	--	N	--
1,1,2,2-TETRACHLOROETHANE	79-34-5	110	0	0%	0.027-26	1.4	ND	ND	1.6	--	N	--	N	N	--
1,1,2-TRICHLOROETHANE	79-00-5	110	1	1%	0.016-19	1.1	0.62	0.62	0.70	N	Y	N	--	Y	--
1,1,2-TRICHLOROTRIFLUOROETHANE	76-13-1	110	81	74%	0.11-27	1.5	0.32	15	17400	N	--	N	--	N	--
1,1-DICHLOROETHANE	75-34-3	110	3	3%	0.015-28	1.1	0.15	1.6	59	N	N	N	--	N	--
1,1-DICHLOROETHENE	75-35-4	110	6	5%	0.0033-26	1.1	0.069	3.7	695	N	N	N	--	N	--
1,2,4-TRICHLOROBENZENE	120-82-1	72	0	0%	0.7-130	10	ND	ND	6.95	--	Y	--	N	Y	Qual.1
1,2,4-TRIMETHYLBENZENE	95-63-6	110	73	66%	0.047-26	1.3	0.07	9.2	209	N	--	N	--	N	--
1,2-DIBROMOETHANE	106-93-4	110	0	0%	0.016-22	1.3	ND	ND	0.16	--	Y	--	N	Y	Qual.1
1,2-DICHLOROBENZENE	95-50-1	110	0	0%	0.079-28	1.8	ND	ND	695	--	N	--	N	N	--
1,2-DICHLOROETHANE	107-06-2	110	10	9%	0.0066-21	1.0	0.026	0.51	3.6	N	N	N	--	N	--
1,2-DICHLOROPROPANE	78-87-5	110	1	1%	0.036-24	1.4	3.3	3.3	14	N	N	N	--	N	--
1,2-DICHLOROTETRAFLUOROETHANE;FI	76-14-2	110	48	44%	0.012-30	1.6	0.1	1.3	NA	--	--	Y	--	N	Bkg.
1,3,5-TRIMETHYLBENZENE	108-67-8	110	35	32%	0.047-28	1.6	0.066	4.2	209	N	--	N	--	N	--
1,3-BUTADIENE	106-99-0	110	14	13%	0.017-32	1.2	0.40	55	3.1	Y	--	N	--	Y	Quant.
1,3-DICHLOROBENZENE	541-73-1	110	17	15%	0.059-29	1.5	0.36	36	NA	--	--	Y	--	N	Bkg.
1,4-DICHLOROBENZENE	106-46-7	110	1	1%	0.062-29	1.6	0.56	0.56	8.5	N	N	N	--	N	--
1,4-DIOXANE	123-91-1	100	17	17%	0.035-23	1.8	0.066	4.9	19	N	--	N	--	N	--
2-BUTANONE (MEK)	78-93-3	108	74	69%	0.14-39	2.4	0.21	93	17400	N	--	N	--	N	--
2-HEXANONE	591-78-6	110	22	20%	0.18-27	1.7	0.24	24	104	N	--	N	--	N	--
4-ETHYLTOLUENE	622-96-8	110	46	42%	0.035-30	1.4	0.063	3.3	NA	--	--	Y	--	N	Bkg.
4-METHYL-2-PENTANONE (MIBK)	108-10-1	110	30	27%	0.054-26	1.4	0.11	71	10400	N	--	N	--	N	--
ACETONE	67-64-1	106	75	71%	0.43-430	14	3.7	390	NA	--	--	Y	--	N	Bkg.
BENZENE	71-43-2	110	78	71%	0.014-28	0.95	0.034	39	12	Y	--	N	--	Y	Quant.
BENZYL CHLORIDE	100-44-7	72	0	0%	0.13-9	1.2	ND	ND	1.9	--	N	--	N	N	--
BROMODICHLOROMETHANE	75-27-4	110	26	24%	0.029-28	1.5	0.12	81	2.5	Y	--	N	--	Y	Quant.
BROMOFORM	75-25-2	110	0	0%	0.093-39	1.9	ND	ND	85	--	N	--	N	N	--
BROMOMETHANE	74-83-9	110	3	3%	0.29-26	3.2	2.5	3.1	17	N	N	N	--	N	--
CARBON DISULFIDE	75-15-0	110	60	55%	0.18-57	2.7	0.26	82	2430	N	--	N	--	N	--
CARBON TETRACHLORIDE	56-23-5	110	42	38%	0.0099-26	1.3	0.03	3.9	16	N	--	N	--	N	--
CHLOROBENZENE	108-90-7	110	1	1%	0.02-25	1.0	14	14	174	N	N	N	--	N	--
CHLOROETHANE	75-00-3	110	24	22%	0.0066-24	1.2	0.05	0.96	13900	N	--	N	--	N	--
CHLOROFORM	67-66-3	110	92	84%	0.012-25	1.0	0.048	1200	4.1	Y	--	N	--	Y	Quant.
CHLOROMETHANE	74-87-3	110	38	35%	0.019-31	1.5	0.02	21	313	N	--	N	--	N	--
CIS-1,2-DICHLOROETHENE	156-59-2	344	41	12%	0.0075-27	0.65	0.026	11.3	NA	--	--	Y	--	N	Bkg.
CIS-1,3-DICHLOROPROPENE	542-75-6	110	0	0%	0.03-30	1.3	ND	ND	23.4	--	N	--	N	N	--
CYCLOHEXANE	110-82-7	110	33	30%	0.14-54	2.3	0.55	54	20900	N	--	N	--	N	--
DIBROMOCHLOROMETHANE	124-48-1	110	6	5%	0.077-25	1.6	0.33	4	NA	--	N	Y	--	N	Bkg.
DICHLORODIFLUOROMETHANE	75-71-8	110	101	92%	0.0057-31	1.4	1.9	12	348	N	--	N	--	N	--
ETHYL ACETATE	141-78-6	48	20	42%	0.54-100	5.8	1.1	280	243	Y	--	N	--	Y	Quant.
ETHYLBENZENE	100-41-4	110	78	71%	0.005-27	1.1	0.025	26	37	N	--	N	--	N	--
HEXACHLORO-1,3-BUTADIENE	87-68-3	72	0	0%	1-150	11	ND	ND	4.3	--	Y	--	N	Y	Qual.1
HEXANE	110-54-3	110	45	41%	0.16-39	1.7	0.35	140	2430	N	--	N	--	N	--
M,P-XYLENE	179601-23-1	110	84	76%	0.0083-50	1.6	0.028	120	348	N	--	N	--	N	--
METHYL TERT-BUTYL ETHER	1634-04-4	110	0	0%	0.01-23	1.0	ND	ND	360	--	N	--	N	N	--

TABLE H.2-3
SOIL GAS COPC SELECTION FOR PROTECTION OF HUMAN HEALTH
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Summary Statistics							SL ($\mu g/m^3$)	COPC Selection					
		No. of Samples	No. Detected	Detection Frequency	Range of DLs ($\mu g/m^3$)	Mean DL ($\mu g/m^3$)	Min. Conc. ($\mu g/m^3$)	Max. Conc. ($\mu g/m^3$)		Is Max. Det. Conc. > SL?	Is Mean DL > SL?	Chemical Detected, No SL?	Chemical ND, No SL?	Is Chemical a COPC?	Type of Evaluation
METHYLENE CHLORIDE	75-09-2	110	25	23%	0.25-54	2.7	0.54	6.7	2090	N	--	N	--	N	--
N-HEPTANE	142-82-5	110	35	32%	0.098-30	1.5	0.36	57	1390	N	--	N	--	N	--
O-XYLENE	95-47-6	110	79	72%	0.0078-28	1.1	0.027	74	348	N	--	N	--	N	--
STYRENE	100-42-5	110	31	28%	0.024-31	1.2	0.025	3.3	3480	N	--	N	--	N	--
TETRACHLOROETHENE	127-18-4	404	313	77%	0.0076-25	0.97	0.20	46000	139	Y	--	N	--	Y	Quant.
TETRAHYDROFURAN	109-99-9	110	36	33%	0.21-24	1.5	0.54	24	6950	N	--	N	--	N	--
TOLUENE	108-88-3	110	92	84%	0.011-23	0.86	0.026	71	17400	N	--	N	--	N	--
TRANS-1,2-DICHLOROETHENE	156-60-5	110	3	3%	0.0065-26	1.3	0.025	0.064	139	N	N	N	--	N	--
TRANS-1,3-DICHLOROPROPENE	542-75-6	110	0	0%	0.039-39	1.6	ND	ND	23.4	--	N	--	N	N	--
TRICHLOROETHENE	79-01-6	405	97	24%	0.015-26	0.72	0.017	180	7.0	Y	--	N	--	Y	Quant.
TRICHLOROFLUOROMETHANE	75-69-4	110	107	97%	0.033-29	1.5	0.8	170	NA	--	--	Y	--	N	Bkg.
VINYL ACETATE	108-05-4	48	7	15%	0.53-430	24	6.4	14.1	695	N	--	N	--	N	--
VINYL CHLORIDE	75-01-4	110	13	12%	0.0028-20	0.91	0.013	0.23	5.6	N	--	N	--	N	--

Notes:

Note - ppb results converted to $\mu g/m^3$ based upon 25°C and 1 atm

Bkg. Background analysis for detected analytes with no screening levels

atm - atmosphere
CAS - chemical abstracts service
conc. - concentration
COPC - chemical of potential concern
Det. - detect
DL - detection limit
max. - maximum
$\mu g/m^3$ - micrograms per cubic meter
N - no
NC - not calculated
ND - non-detect
No. - number
ppb - parts per billion
Qual.1 - qualitative analysis for infrequently detected analytes with insufficient detection limits
Qual.2 - qualitative analysis for non-detected analytes with no screening levels
Quant. - quantitative
SL - screening level
Y - yes

TABLE H.2-4
INDOOR AIR COPC SELECTION FOR PROTECTION OF HUMAN HEALTH
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Summary Statistics							SL (µg/m³)	COPC Selection					
		No. of Samples	No. Detected	Detection Frequency	Range of DLs (µg/m³)	Mean DL (µg/m³)	Min. Conc. (µg/m³)	Max. Conc. (µg/m³)		Is Max. Det. Conc. > SL?	Is Mean DL > SL?	Chemical Detected, No SL?	Chemical ND, No SL?	Is Chemical a COPC?	Type of Evaluation
1,1,1-TRICHLOROETHANE	71-55-6	381	164	43%	0.0047-0.82	0.23	0.013	10	520	N	--	N	--	N	--
1,1,2,2-TETRACHLOROETHANE	79-34-5	264	4	2%	0.02-1.03	0.37	0.11	3.3	0.048	Y	Y	N	--	Y	Quant.
1,1,2-TRICHLOROETHANE	79-00-5	264	3	1%	0.013-0.82	0.29	0.048	0.88	0.021	Y	Y	N	--	Y	Quant.
1,1,2-TRICHLOROTRIFLUOROETHAN	76-13-1	264	93	35%	0.11-6.08	0.79	0.33	0.71	520	N	--	N	--	N	--
1,1-DICHLOROETHANE	75-34-3	264	4	2%	0.0058-0.61	0.22	0.0084	0.14	1.8	N	N	N	--	N	--
1,1-DICHLOROETHENE	75-35-4	264	8	3%	0.004-0.59	0.22	0.027	0.42	21	N	N	N	--	N	--
1,2,4-TRICHLOROBENZENE	120-82-1	240	2	1%	0.85-6.1	2.0	4	4.6	0.21	Y	Y	N	--	Y	Quant.
1,2,4-TRIMETHYLBENZENE	95-63-6	276	163	59%	0.05-1.5	0.55	0.062	27	6.3	Y	--	N	--	Y	Quant.
1,2-DIBROMOETHANE	106-93-4	264	2	1%	0.016-1.2	0.45	0.028	0.094	0.0047	Y	Y	N	--	Y	Quant.
1,2-DICHLOROBENZENE	95-50-1	264	1	0%	0.097-3.7	0.92	0.71	0.71	21	N	N	N	--	N	--
1,2-DICHLOROETHANE	107-06-2	381	271	71%	0.00191-0.61	0.16	0.027	7.0	0.11	Y	--	N	--	Y	Quant.
1,2-DICHLOROPROPANE	78-87-5	264	5	2%	0.037-0.94	0.36	0.11	1.6	0.42	Y	N	N	--	Y	Quant.
1,2-DICHLOROTETRAFLUOROETHAN	76-14-2	264	145	55%	0.013-6.22	0.42	0.087	0.15	NA	--	--	Y	--	N	Bkg.
1,3,5-TRIMETHYLBENZENE	108-67-8	264	52	20%	0.048-1.5	0.50	0.09	8.8	6.3	Y	--	N	--	Y	Quant.
1,3-BUTADIENE	106-99-0	264	31	12%	0.017-2.3	0.22	0.11	1.4	0.094	Y	--	N	--	Y	Quant.
1,3-DICHLOROBENZENE	541-73-1	264	2	1%	0.061-3.2	0.77	0.18	0.49	NA	--	N	Y	--	N	Bkg.
1,4-DICHLOROBENZENE	106-46-7	369	69	19%	0.022-1.8	0.38	0.025	56	0.26	Y	--	N	--	Y	Quant.
1,4-DIOXANE	123-91-1	262	60	23%	0.036-0.77	0.19	0.053	4.7	0.56	Y	--	N	--	Y	Quant.
2,2,4-TRIMETHYLPENTANE	540-84-1	163	44	27%	0.23-6.21	0.66	0.39	40	NA	--	--	Y	--	N	Bkg.
2-BUTANONE (MEK)	78-93-3	381	366	96%	0.016-2.4	0.30	0.27	120	520	N	--	N	--	N	--
2-HEXANONE	591-78-6	276	24	9%	0.098-2.1	0.75	0.12	1.7	3.1	N	N	N	--	N	--
4-ETHYLTOLUENE	622-96-8	264	117	44%	0.036-1.5	0.50	0.049	8.9	NA	--	--	Y	--	N	Bkg.
4-METHYL-2-PENTANONE (MIBK)	108-10-1	369	179	49%	0.017-1.2	0.26	0.038	12	310	N	--	N	--	N	--
ACETONE	67-64-1	272	272	100%	0.34-13.9	1.10	7.0	330	NA	--	--	Y	--	N	Bkg.
ALLYL CHLORIDE	107-05-1	163	0	0%	0.21-3.57	0.59	ND	ND	0.1	--	Y	--	N	Y	Qual.1
BENZENE	71-43-2	381	364	96%	0.014-0.48	0.19	0.15	35	0.36	Y	--	N	--	Y	Quant.
BENZYL CHLORIDE	100-44-7	240	1	0%	0.13-2.2	0.81	0.84	0.84	0.057	Y	Y	N	--	Y	Quant.
BROMODICHLOROMETHANE	75-27-4	264	15	6%	0.029-2.3	0.60	0.14	1.1	0.076	Y	Y	N	--	Y	Quant.
BROMOFORM	75-25-2	264	0	0%	0.096-4	1.15	ND	ND	2.6	--	N	--	N	N	--
BROMOMETHANE	74-83-9	264	3	1%	0.11-7.5	0.99	1.8	1.9	0.52	Y	Y	N	--	Y	Quant.
CARBON DISULFIDE	75-15-0	276	31	11%	0.21-3.3	0.54	0.28	29.0	73	N	--	N	--	N	--
CARBON TETRACHLORIDE	56-23-5	369	285	77%	0.0099-0.94	0.26	0.2	1.5	0.47	Y	--	N	--	Y	Quant.
CHLOROBENZENE	108-90-7	369	4	1%	0.015-1.1	0.27	0.017	0.023	5.2	N	N	N	--	N	--
CHLOROETHANE	75-00-3	264	85	32%	0.0066-0.4	0.15	0.014	0.17	420	N	--	N	--	N	--
CHLOROFORM	67-66-3	381	353	93%	0.012-0.73	0.20	0.072	47	0.12	Y	--	N	--	Y	Quant.
CHLOROMETHANE	74-87-3	276	264	96%	0.018-0.38	0.16	0.14	5.4	9.4	N	--	N	--	N	--
CIS-1,2-DICHLOROETHENE	156-59-2	1125	129	11%	0.0075-1	0.31	0.034	11	NA	--	--	Y	--	N	Bkg.
CIS-1,3-DICHLOROPROPENE	542-75-6	264	0	0%	0.031-0.69	0.32	ND	ND	0.7	--	N	--	N	N	--
CYCLOHEXANE	110-82-7	381	258	68%	0.02-2.59	0.28	0.13	31	630	N	--	N	--	N	--
DIBROMOCHLOROMETHANE	124-48-1	264	1	0%	0.08-2.3	0.70	0.18	0.18	NA	--	N	Y	--	N	Bkg.
DICHLORODIFLUOROMETHANE	75-71-8	276	269	97%	0.0057-6.78	0.33	1.3	3.7	10	N	--	N	--	N	--

TABLE H.2-4
INDOOR AIR COPC SELECTION FOR PROTECTION OF HUMAN HEALTH
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Summary Statistics							SL (µg/m³)	COPC Selection					
		No. of Samples	No. Detected	Detection Frequency	Range of DLs (µg/m³)	Mean DL (µg/m³)	Min. Conc. (µg/m³)	Max. Conc. (µg/m³)		Is Max. Det. Conc. > SL?	Is Mean DL > SL?	Chemical Detected, No SL?	Chemical ND, No SL?	Is Chemical a COPC?	Type of Evaluation
ETHANOL	64-17-5	268	268	100%	0.064-5	0.49	0.5	3700	NA	--	--	Y	--	N	Bkg.
ETHYL ACETATE	141-78-6	218	191	88%	0.1-4.2	0.46	0.13	720	7.3	Y	--	N	--	Y	Quant.
ETHYLBENZENE	100-41-4	381	318	83%	0.005-0.65	0.20	0.056	27	1.1	Y	--	N	--	Y	Quant.
HEXACHLORO-1,3-BUTADIENE	87-68-3	240	2	1%	0.78-7.4	2.4	4.4	5.3	0.13	Y	Y	N	--	Y	Quant.
HEXANE	110-54-3	379	309	82%	0.02-7.26	0.34	0.22	72	73	N	--	N	--	N	--
ISOPROPYL ALCOHOL (MANUFACTU	67-63-0	163	160	98%	0.15-6.49	0.45	1.1	520	21	Y	--	N	--	Y	Quant.
ISOPROPYLBENZENE	98-82-8	163	8	5%	0.025-1.5	0.25	0.18	1.1	42	N	N	N	--	N	--
M,P-XYLENE	108-38-3	381	354	93%	0.0083-1.3	0.25	0.19	122	10	Y	--	N	--	Y	Quant.
METHYL TERT-BUTYL ETHER	1634-04-4	369	31	8%	0.01-2.33	0.16	0.012	0.026	11	N	N	N	--	N	--
METHYLENE CHLORIDE	75-09-2	274	183	67%	0.16-5.21	0.73	0.29	500	63	Y	--	N	--	Y	Quant.
NAPHTHALENE	91-20-3	119	34	29%	0.026-1.83	0.26	0.031	8.3	0.083	Y	--	N	--	Y	Quant.
N-HEPTANE	142-82-5	381	280	73%	0.019-1.7	0.33	0.18	36	42	N	--	N	--	N	--
N-PROPYLBENZENE	103-65-1	254	125	49%	0.021-1.3	0.16	0.026	1.2	100	N	--	N	--	N	--
O-XYLENE	95-47-6	381	315	83%	0.0076-0.65	0.19	0.061	40	10	Y	--	N	--	Y	Quant.
STYRENE	100-42-5	369	199	54%	0.024-1.3	0.30	0.03	1.8	100	N	--	N	--	N	--
TETRACHLOROETHENE	127-18-4	1229	740	60%	0.0079-1.02	0.48	0.043	9358	4.2	Y	--	N	--	Y	Quant.
TETRAHYDROFURAN	109-99-9	264	89	34%	0.1-2.4	0.55	0.13	70	210	N	--	N	--	N	--
TOLUENE	108-88-3	375	370	99%	0.0097-5.7	0.20	0.41	350	520	N	--	N	--	N	--
TRANS-1,2-DICHLOROETHENE	156-60-5	289	51	18%	0.0065-0.59	0.22	0.018	2.2	4.2	N	--	N	--	N	--
TRANS-1,3-DICHLOROPROPENE	542-75-6	264	0	0%	0.0323-1.5	0.39	ND	ND	0.7	--	N	--	N	N	--
TRICHLOROETHENE	79-01-6	1230	267	22%	0.0078-0.81	0.36	0.018	1441	0.21	Y	--	N	--	Y	Quant.
TRICHLOROFLUOROMETHANE	75-69-4	276	269	97%	0.034-4.6	0.43	0.87	5.59	NA	--	--	Y	--	N	Bkg.
VINYL ACETATE	108-05-4	115	9	8%	0.04-2.7	0.75	1.8	32	21	Y	N	N	--	Y	Quant.
VINYL CHLORIDE	75-01-4	338	12	4%	0.0035-0.38	0.11	0.013	0.53	0.17	Y	N	N	--	Y	Quant.

Notes:
Note - ppb results converted to µg/m³ based upon 25°C and 1 atm
Bkg. Background analysis for detected analytes with no screening levels
atm - atmosphere
CAS - chemical abstracts service
conc. - concentration
COPC - chemical of potential concern
Det. - detect
DL - detection limit
max. - maximum
µg/m³ - micrograms per cubic meter
N - no
NC - not calculated
ND - non-detect
No. - number
ppb - parts per billion
Qual.1 - qualitative analysis for infrequently detected analytes with insufficient detection limits
Qual.2 - qualitative analysis for non-detected analytes with no screening levels
Quant. - quantitative
SL - screening level
Y - yes

TABLE H.2-5
OUTDOOR AIR COPC SELECTION FOR PROTECTION OF HUMAN HEALTH
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Summary Statistics							SL (µg/m3)	COPC Selection					
		No. of Samples	No. Detected	Detection Frequency	Range of DLs (µg/m3)	Mean DL (µg/m3)	Min. Conc. (µg/m3)	Max. Conc. (µg/m3)		Is Max. Det. Conc. > SL?	Is Mean DL > SL?	Chemical Detected, No SL?	Chemical ND, No SL?	Is Chemical a COPC?	Type of Evaluation
1,1,1-TRICHLOROETHANE	71-55-6	40	3	8%	0.005-0.82	0.11	0.013	0.0358	520	N	N	N	--	N	--
1,1,2,2-TETRACHLOROETHANE	79-34-5	40	0	0%	0.02-1.03	0.15	ND	ND	0.048	--	Y	--	N	Y	Qual.1
1,1,2-TRICHLOROETHANE	79-00-5	40	0	0%	0.013-0.82	0.12	ND	ND	0.021	--	Y	--	N	Y	Qual.1
1,1,2-TRICHLOROTRIFLUOROETHANE	76-13-1	40	17	43%	0.13-1.15	0.63	0.4	0.62	520	N	--	N	--	N	--
1,1-DICHLOROETHANE	75-34-3	40	0	0%	0.006-0.61	0.09	ND	ND	1.8	--	N	--	N	N	--
1,1-DICHLOROETHENE	75-35-4	40	0	0%	0.0036-0.59	0.09	ND	ND	21	--	N	--	N	N	--
1,2,4-TRICHLOROBENZENE	120-82-1	38	0	0%	0.76-2.9	1.55	ND	ND	0.21	--	Y	--	N	Y	Qual.1
1,2,4-TRIMETHYLBENZENE	95-63-6	40	20	50%	0.052-0.74	0.26	0.093	3.3	6.3	N	--	N	--	N	--
1,2-DIBROMOETHANE	106-93-4	40	0	0%	0.017-1.2	0.20	ND	ND	0.0047	--	Y	--	N	Y	Qual.1
1,2-DICHLOROBENZENE	95-50-1	40	0	0%	0.087-1.8	0.60	ND	ND	21	--	N	--	N	N	--
1,2-DICHLOROETHANE	107-06-2	40	29	73%	0.00191-0.61	0.09	0.034	0.15	0.11	Y	--	N	--	Y	Quant.
1,2-DICHLOROPROPANE	78-87-5	40	0	0%	0.0409-0.73	0.23	ND	ND	0.42	--	N	--	N	N	--
1,2-DICHLOROTETRAFLUOROETHANE;FL	76-14-2	40	33	83%	0.016-1.05	0.16	0.094	0.13	NA	--	--	Y	--	N	Bkg.
1,3,5-TRIMETHYLBENZENE	108-67-8	40	9	23%	0.088-0.74	0.25	0.41	1	6.3	N	--	N	--	N	--
1,3-BUTADIENE	106-99-0	40	2	5%	0.041-0.33	0.16	0.14	0.14	0.094	Y	Y	N	--	Y	Quant.
1,3-DICHLOROBENZENE	541-73-1	40	1	3%	0.095-1.09	0.49	0.39	0.39	NA	--	N	Y	--	N	Bkg.
1,4-DICHLOROBENZENE	106-46-7	40	1	3%	0.0415-0.9	0.21	0.07	0.07	0.26	N	N	N	--	N	--
1,4-DIOXANE	123-91-1	36	10	28%	0.088-0.54	0.16	0.11	0.74	0.56	Y	--	N	--	Y	Quant.
2,2,4-TRIMETHYLPENTANE	540-84-1	34	3	9%	0.24-2	0.55	0.71	2.4	NA	--	N	Y	--	N	Bkg.
2-BUTANONE (MEK)	78-93-3	40	40	100%	0.18-0.65	0.36	0.42	8.2	520	N	--	N	--	N	--
2-HEXANONE	591-78-6	40	6	15%	0.11-1.23	0.48	0.19	0.77	3.1	N	--	N	--	N	--
4-ETHYLTOLUENE	622-96-8	40	18	45%	0.07-0.74	0.25	0.092	2.4	NA	--	--	Y	--	N	Bkg.
4-METHYL-2-PENTANONE (MIBK)	108-10-1	40	8	20%	0.05-0.61	0.24	0.21	0.45	310	N	--	N	--	N	--
ACETONE	67-64-1	40	40	100%	0.35-2.4	1.03	4.8	35	NA	--	--	Y	--	N	Bkg.
ALLYL CHLORIDE	107-05-1	34	0	0%	0.22-1.2	0.51	ND	ND	0.1	--	Y	--	N	Y	Qual.1
BENZENE	71-43-2	40	38	95%	0.015-0.48	0.11	0.2	1.8	0.36	Y	--	N	--	Y	Quant.
BENZYL CHLORIDE	100-44-7	38	0	0%	0.14-1.6	0.45	ND	ND	0.057	--	Y	--	N	Y	Qual.1
BROMODICHLOROMETHANE	75-27-4	40	0	0%	0.12-1	0.43	ND	ND	0.076	--	Y	--	N	Y	Qual.1
BROMOFORM	75-25-2	40	0	0%	0.16-1.6	0.67	ND	ND	2.6	--	N	--	N	N	--
BROMOMETHANE	74-83-9	40	0	0%	0.13-1.7	1.07	ND	ND	0.52	--	Y	--	N	Y	Qual.1
CARBON DISULFIDE	75-15-0	40	2	5%	0.2-0.74	0.52	0.461	5.9	73	N	N	N	--	N	--
CARBON TETRACHLORIDE	56-23-5	40	36	90%	0.01-0.94	0.15	0.32	0.69	0.47	Y	--	N	--	Y	Quant.
CHLOROBENZENE	108-90-7	40	0	0%	0.068-0.69	0.24	ND	ND	5.2	--	N	--	N	N	--
CHLOROETHANE	75-00-3	40	11	28%	0.0071-0.4	0.07	0.02	0.077	420	N	--	N	--	N	--
CHLOROFORM	67-66-3	40	32	80%	0.012-0.73	0.11	0.062	1.0	0.12	Y	--	N	--	Y	Quant.
CHLOROMETHANE	74-87-3	40	40	100%	0.018-0.31	0.11	0.23	1.4	9.4	N	--	N	--	N	--
CIS-1,2-DICHLOROETHENE	156-59-2	77	5	6%	0.0079-0.59	0.24	0.03	0.109		N	N	N	--	N	--
CIS-1,3-DICHLOROPROPENE	542-75-6	40	0	0%	0.0334-0.68	0.19	ND	ND	0.7	--	N	--	N	N	--
CYCLOHEXANE	110-82-7	40	7	18%	0.096-0.71	0.28	0.096	0.99	630	N	--	N	--	N	--
DIBROMOCHLOROMETHANE	124-48-1	40	0	0%	0.12-1.3	0.46	ND	ND		--	N	--	N	N	--
DICHLORODIFLUOROMETHANE	75-71-8	40	40	100%	0.0061-0.74	0.13	1.8	2.71	10	N	--	N	--	N	--

TABLE H.2-5
OUTDOOR AIR COPC SELECTION FOR PROTECTION OF HUMAN HEALTH
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Summary Statistics							SL (µg/m3)	COPC Selection					
		No. of Samples	No. Detected	Detection Frequency	Range of DLs (µg/m3)	Mean DL (µg/m3)	Min. Conc. (µg/m3)	Max. Conc. (µg/m3)		Is Max. Det. Conc. > SL?	Is Mean DL > SL?	Chemical Detected, No SL?	Chemical ND, No SL?	Is Chemical a COPC?	Type of Evaluation
ETHANOL	64-17-5	34	34	100%	0.17-1.6	0.45	2.9	64	NA	--	--	Y	--	N	Bkg.
ETHYL ACETATE	141-78-6	6	2	33%	0.48-0.55	0.53	1	8.9	7.3	Y	--	N	--	Y	Quant.
ETHYLBENZENE	100-41-4	40	34	85%	0.0054-0.65	0.11	0.067	4.7	1.1	Y	--	N	--	Y	Quant.
HEXACHLORO-1,3-BUTADIENE	87-68-3	38	0	0%	0.8-3.9	1.88	ND	ND	0.13	--	Y	--	N	Y	Qual.1
HEXANE	110-54-3	40	16	40%	0.17-0.73	0.38	0.2	2.4	73	N	--	N	--	N	--
ISOPROPYL ALCOHOL (MANUFACTURING	67-63-0	34	24	71%	0.16-2.2	0.29	0.79	16	21	N	--	N	--	N	--
ISOPROPYLBENZENE	98-82-8	34	1	3%	0.057-0.38	0.23	0.087	0.087	42	N	N	N	--	N	--
M,P-XYLENE	108-38-3	40	40	100%	0.0089-0.65	0.12	0.23	12	10	Y	--	N	--	Y	Quant.
METHYL TERT-BUTYL ETHER	1634-04-4	40	5	13%	0.01-0.54	0.08	0.012	0.020	11	N	--	N	--	N	--
METHYLENE CHLORIDE	75-09-2	40	15	38%	0.2-1	0.54	0.28	4.6	63	N	--	N	--	N	--
N-HEPTANE	142-82-5	40	20	50%	0.14-0.77	0.36	0.29	1.6	42	N	--	N	--	N	--
N-PROPYLBENZENE	103-65-1	33	9	27%	0.066-0.29	0.22	0.22	0.58	100	N	--	N	--	N	--
O-XYLENE	95-47-6	40	34	85%	0.0076-0.65	0.10	0.08	5.6	10	N	--	N	--	N	--
STYRENE	100-42-5	40	9	23%	0.063-0.64	0.18	0.28	1.4	100	N	--	N	--	N	--
TETRACHLOROETHENE	127-18-4	77	32	42%	0.012-1.02	0.41	0.083	76	4.2	Y	--	N	--	Y	Quant.
TETRAHYDROFURAN	109-99-9	40	11	28%	0.11-1.3	0.51	0.17	5.6	210	N	--	N	--	N	--
TOLUENE	108-88-3	40	40	100%	0.0096-0.57	0.11	0.46	23	520	N	--	N	--	N	--
TRANS-1,2-DICHLOROETHENE	156-60-5	40	11	28%	0.0069-0.59	0.09	0.023	0.46	4.2	N	--	N	--	N	--
TRANS-1,3-DICHLOROPROPENE	542-75-6	40	0	0%	0.0323-0.68	0.28	ND	ND	0.7	--	N	--	N	N	--
TRICHLOROETHENE	79-01-6	77	5	6%	0.0078-0.81	0.31	0.029	0.29	0.21	Y	Y	N	--	Y	Quant.
TRICHLOROFLUOROMETHANE	75-69-4	40	40	100%	0.083-0.84	0.25	1.1	1.4		N	--	N	--	N	--
VINYL ACETATE	108-05-4	7	1	14%	0.04-2.4	0.94	2.4	2.4	21	N	--	N	--	N	--
VINYL CHLORIDE	75-01-4	40	3	8%	0.0031-0.38	0.06	0.038	0.14	0.17	N	N	N	--	N	--

Notes:
Note - ppb results converted to µg/m^3 based upon 25°C and 1 atm
Bkg. Background analysis for detected analytes with no screening levels
atm - atmosphere
CAS - chemical abstracts service
conc. - concentration
COPC - chemical of potential concern
Det. - detect
DL - detection limit
max. - maximum
µg/m^3 - micrograms per cubic meter
N - no
NC - not calculated
ND - non-detect
No. - number
ppb - parts per billion
Qual.1 - qualitative analysis for infrequently detected analytes with insufficient detection limits
Qual.2 - qualitative analysis for non-detected analytes with no screening levels
Quant. - quantitative
SL - screening level
Y - yes

TABLE H.2-6
SOIL/SEDIMENT COPC SELECTION FOR HUMAN HEALTH
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Summary Statistics							SL (mg/kg)	COPC Selection					
		No. of Samples	No. Detected	Detection Frequency	Mean DL (mg/kg)	Range of DLs (mg/kg)	Min. Conc. (mg/kg)	Max. Conc. (mg/kg)		Is Max. Det. Conc. > SL?	Is Mean DL > SL?	Chemical Detected, No SL?	Chemical ND, No SL?	Is Chemical a COPC?	Type of Evaluation
1,1,1-TRICHLOROETHANE	71-55-6	44	0	0%	0.0005	0.00043-0.00061	ND	ND	810	--	N	--	N	N	--
1,1,2,2-TETRACHLOROETHANE	79-34-5	44	0	0%	0.0005	0.00043-0.00061	ND	ND	0.6	--	N	--	N	N	--
1,1,2-TRICHLOROETHANE	79-00-5	44	0	0%	0.0005	0.00043-0.00069	ND	ND	0.15	--	N	--	N	N	--
1,1,2-TRICHLOROTRIFLUOROETHANE	76-13-1	44	0	0%	0.0010	0.00053-0.0012	ND	ND	670	--	N	--	N	N	--
1,1'-BIPHENYL	92-52-4	3	0	0%	0.041	0.035-0.047	ND	ND	4.7	--	N	--	N	N	--
1,1-DICHLOROETHANE	75-34-3	44	0	0%	0.0005	0.00039-0.00061	ND	ND	3.6	--	N	--	N	N	--
1,1-DICHLOROETHENE	75-35-4	44	0	0%	0.0005	0.00043-0.00065	ND	ND	23	--	N	--	N	N	--
1,2,3-TRICHLOROBENZENE	87-61-6	44	0	0%	0.0010	0.0008-0.0012	ND	ND	6.3	--	N	--	N	N	--
1,2,4,5-TETRACHLOROBENZENE	95-94-3	3	0	0%	0.041	0.035-0.047	ND	ND	0.23	--	N	--	N	N	--
1,2,4-TRICHLOROBENZENE	120-82-1	44	0	0%	0.0010	0.00086-0.0012	ND	ND	5.8	--	N	--	N	N	--
1,2,4-TRIMETHYLBENZENE	95-63-6	40	0	0%	0.0006	0.00048-0.00067	ND	ND	30	--	N	--	N	N	--
1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	44	0	0%	0.0010	0.00043-0.0012	ND	ND	0.0053	--	N	--	N	N	--
1,2-DIBROMOETHANE	106-93-4	44	0	0%	0.0005	0.00036-0.00061	ND	ND	0.036	--	N	--	N	N	--
1,2-DICHLOROBENZENE	95-50-1	44	0	0%	0.0005	0.00043-0.0007	ND	ND	180	--	N	--	N	N	--
1,2-DICHLOROETHANE	107-06-2	44	0	0%	0.0005	0.00043-0.00061	ND	ND	0.46	--	N	--	N	N	--
1,2-DICHLOROPROPANE	78-87-5	44	0	0%	0.0005	0.00039-0.00061	ND	ND	1.6	--	N	--	N	N	--
1,3,5-TRIMETHYLBENZENE	108-67-8	40	0	0%	0.0006	0.00051-0.00072	ND	ND	27	--	N	--	N	N	--
1,3-DICHLOROBENZENE	541-73-1	44	0	0%	0.0005	0.00045-0.00076	ND	ND	NA	--	N	--	Y	Y	Qual.2
1,3-DICHLOROPROPYLENE	542-75-6	40	0	0%	0.0010	0.00087-0.0012	ND	ND	1.8	--	N	--	N	N	--
1,4-DICHLOROBENZENE	106-46-7	44	0	0%	0.0005	0.00043-0.00062	ND	ND	2.6	--	N	--	N	N	--
1,4-DIOXANE	123-91-1	3	0	0%	0.039	0.033-0.045	ND	ND	5.3	--	N	--	N	N	--
2,3,4,6-TETRACHLOROPHENOL	58-90-2	3	0	0%	0.043	0.037-0.05	ND	ND	190	--	N	--	N	N	--
2,4,5-TRICHLOROPHENOL	95-95-4	3	0	0%	0.038	0.033-0.043	ND	ND	630	--	N	--	N	N	--
2,4,6-TRICHLOROPHENOL	88-06-2	3	0	0%	0.043	0.037-0.049	ND	ND	6.3	--	N	--	N	N	--
2,4-DICHLOROPHENOL	120-83-2	3	0	0%	0.038	0.033-0.044	ND	ND	19	--	N	--	N	N	--
2,4-DIMETHYLPHENOL	105-67-9	3	0	0%	0.039	0.034-0.045	ND	ND	130	--	N	--	N	N	--
2,4-DINITROPHENOL	51-28-5	3	0	0%	0.032	0.028-0.037	ND	ND	13	--	N	--	N	N	--
2,4-DINITROTOLUENE	121-14-2	3	0	0%	0.044	0.038-0.051	ND	ND	1.7	--	N	--	N	N	--
2,6-DINITROTOLUENE	606-20-2	3	0	0%	0.039	0.034-0.045	ND	ND	0.36	--	N	--	N	N	--
2-BUTANONE (MEK)	78-93-3	44	0	0%	0.0025	0.0022-0.003	ND	ND	2700	--	N	--	N	N	--
2-CHLORONAPHTHALENE	91-58-7	3	0	0%	0.039	0.034-0.045	ND	ND	480	--	N	--	N	N	--
2-CHLOROPHENOL	95-57-8	3	0	0%	0.040	0.035-0.047	ND	ND	39	--	N	--	N	N	--
2-HEXANONE	591-78-6	44	0	0%	0.0028	0.0021-0.0035	ND	ND	20	--	N	--	N	N	--
2-METHYLNAPHTHALENE	91-57-6	3	0	0%	0.041	0.035-0.047	ND	ND	24	--	N	--	N	N	--
2-METHYLPHENOL	95-48-7	3	0	0%	0.042	0.036-0.048	ND	ND	320	--	N	--	N	N	--
2-NITROANILINE	88-74-4	3	0	0%	0.041	0.035-0.047	ND	ND	63	--	N	--	N	N	--
2-NITROPHENOL	88-75-5	3	0	0%	0.044	0.038-0.051	ND	ND	NA	--	N	--	Y	Y	Qual.2
3,3'-DICHLOROBENZIDINE	91-94-1	3	0	0%	0.040	0.035-0.046	ND	ND	1.2	--	N	--	N	N	--
3-NITROANILINE	99-09-2	3	0	0%	0.043	0.037-0.049	ND	ND	NA	--	N	--	Y	Y	Qual.2
4,6-DINITRO-2-METHYLPHENOL	534-52-1	3	0	0%	0.038	0.033-0.044	ND	ND	0.51	--	N	--	N	N	--
4-BROMOPHENYL PHENYL ETHER	101-55-3	3	0	0%	0.042	0.036-0.048	ND	ND	NA	--	N	--	Y	Y	Qual.2
4-CHLORO-3-METHYLPHENOL	59-50-7	3	0	0%	0.038	0.033-0.043	ND	ND	630	--	N	--	N	N	--
4-CHLOROANILINE	106-47-8	3	0	0%	0.043	0.037-0.05	ND	ND	2.7	--	N	--	N	N	--
4-CHLOROPHENYL PHENYL ETHER	7005-72-3	3	0	0%	0.042	0.036-0.049	ND	ND	NA	--	N	--	Y	Y	Qual.2
4-METHYL-2-PENTANONE (MIBK)	108-10-1	44	0	0%	0.0027	0.0012-0.0034	ND	ND	3300	--	N	--	N	N	--
4-METHYLPHENOL	106-44-5	3	0	0%	0.043	0.037-0.05	ND	ND	130	--	N	--	N	N	--
4-NITROANILINE	100-01-6	3	0	0%	0.047	0.04-0.054	ND	ND	25	--	N	--	N	N	--
4-NITROPHENOL	100-02-7	3	0	0%	0.045	0.039-0.052	ND	ND	NA	--	N	--	Y	Y	Qual.2
ACENAPHTHENE	83-32-9	3	0	0%	0.042	0.036-0.048	ND	ND	360	--	N	--	N	N	--
ACENAPHTHYLENE	208-96-8	3	0	0%	0.040	0.035-0.046	ND	ND	NA	--	N	--	Y	Y	Qual.2
ACETONE	67-64-1	44	10	23%	0.0030	0.0014-0.0038	0.0051	0.13	7000	N	--	N	--	N	--

TABLE H.2-6
SOIL/SEDIMENT COPC SELECTION FOR HUMAN HEALTH
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Summary Statistics							SL (mg/kg)	COPC Selection					
		No. of Samples	No. Detected	Detection Frequency	Mean DL (mg/kg)	Range of DLs (mg/kg)	Min. Conc. (mg/kg)	Max. Conc. (mg/kg)		Is Max. Det. Conc. > SL?	Is Mean DL > SL?	Chemical Detected, No SL?	Chemical ND, No SL?	Is Chemical a COPC?	Type of Evaluation
ACETOPHENONE	98-86-2	3	0	0%	0.041	0.036-0.048	ND	ND	780	--	N	--	N	N	--
ANTHRACENE	120-12-7	3	0	0%	0.042	0.036-0.049	ND	ND	1800	--	N	--	N	N	--
ANTIMONY	7440-36-0	3	3	100%	0.021	0.017-0.028	1.2	2.7	3.1	N	--	N	--	N	--
ARSENIC	7440-38-2	3	3	100%	0.073	0.059-0.1	6.1	24	0.68	Y	--	N	--	Y	Quant.
ATRAZINE	1912-24-9	3	0	0%	0.043	0.037-0.049	ND	ND	2.4	--	N	--	N	N	--
BARIUM	7440-39-3	3	3	100%	0.12	0.093-0.16	122	224	1500	N	--	N	--	N	--
BENZALDEHYDE	100-52-7	3	0	0%	0.043	0.037-0.05	ND	ND	170	--	N	--	N	N	--
BENZENE	71-43-2	44	0	0%	0.0005	0.00043-0.00061	ND	ND	0.2	--	N	--	N	N	--
BENZO(A)ANTHRACENE	56-55-3	3	0	0%	0.047	0.04-0.054	ND	ND	1.1	--	N	--	N	N	--
BENZO(A)PYRENE	50-32-8	3	1	33%	0.044	0.038-0.05	0.085	0.085	0.11	N	--	N	--	N	--
BENZO(B)FLUORANTHENE	205-99-2	3	1	33%	0.042	0.036-0.048	0.21	0.21	1.1	N	--	N	--	N	--
BENZO(G,H,I)PERYLENE	191-24-2	3	1	33%	0.041	0.036-0.047	0.064	0.064	NA	--	--	Y	--	N	Bkg.
BENZO(K)FLUORANTHENE	207-08-9	3	0	0%	0.046	0.04-0.053	ND	ND	11	--	N	--	N	N	--
BENZYL BUTYL PHTHALATE	85-68-7	3	0	0%	0.046	0.04-0.053	ND	ND	290	--	N	--	N	N	--
BERYLLIUM	7440-41-7	3	3	100%	0.070	0.057-0.097	0.31	0.40	16	N	--	N	--	N	--
BIS(2-CHLOROETHOXY)METHANE	111-91-1	3	0	0%	0.043	0.037-0.049	ND	ND	19	--	N	--	N	N	--
BIS(2-CHLOROETHYL) ETHER	111-44-4	3	0	0%	0.044	0.038-0.05	ND	ND	0.23	--	N	--	N	N	--
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	3	0	0%	0.047	0.041-0.054	ND	ND	39	--	N	--	N	N	--
BIS-CHLOROISOPROPYL ETHER	108-60-1	3	0	0%	0.039	0.034-0.045	ND	ND	310	--	N	--	N	N	--
BROMOCHLOROMETHANE	74-97-5	44	0	0%	0.0005	0.00043-0.0007	ND	ND	15	--	N	--	N	N	--
BROMODICHLOROMETHANE	75-27-4	44	0	0%	0.0005	0.00043-0.00063	ND	ND	0.29	--	N	--	N	N	--
BROMOFORM	75-25-2	44	0	0%	0.0010	0.00038-0.0012	ND	ND	19	--	N	--	N	N	--
BROMOMETHANE	74-83-9	44	0	0%	0.0017	0.00032-0.0022	ND	ND	0.68	--	N	--	N	N	--
CADMIUM	7440-43-9_die	3	3	100%	0.037	0.03-0.051	1.1	1.8	0.71	Y	--	N	--	Y	Quant.
CAPROLACTAM	105-60-2	3	0	0%	0.046	0.04-0.053	ND	ND	3100	--	N	--	N	N	--
CARBAZOLE	86-74-8	3	0	0%	0.044	0.038-0.051	ND	ND	NA	--	N	--	Y	Y	Qual.2
CARBON DISULFIDE	75-15-0	44	0	0%	0.0005	0.00038-0.00061	ND	ND	77	--	N	--	N	N	--
CARBON TETRACHLORIDE	56-23-5	44	0	0%	0.0005	0.00039-0.00066	ND	ND	0.65	--	N	--	N	N	--
CHLOROBENZENE	108-90-7	44	0	0%	0.0005	0.00043-0.00061	ND	ND	28	--	N	--	N	N	--
CHLOROETHANE	75-00-3	44	0	0%	0.0012	0.00054-0.0016	ND	ND	540	--	N	--	N	N	--
CHLOROFORM	67-66-3	44	0	0%	0.0005	0.00039-0.00061	ND	ND	0.32	--	N	--	N	N	--
CHLOROMETHANE	74-87-3	44	0	0%	0.0009	0.00036-0.0012	ND	ND	11	--	N	--	N	N	--
CHROMIUM	7440-47-3	3	3	100%	0.048	0.039-0.066	9.7	14	12000	N	--	N	--	N	--
CHRYSENE	218-01-9	3	1	33%	0.046	0.04-0.053	0.12	0.12	110	N	--	N	--	N	--
CIS-1,2-DICHLOROETHENE	156-59-2	44	0	0%	0.0005	0.00043-0.00061	ND	ND	16	--	N	--	N	N	--
CIS-1,3-DICHLOROPROPENE	542-75-6	44	0	0%	0.0010	0.00043-0.0012	ND	ND	1.8	--	N	--	N	N	--
COBALT	7440-48-4	3	3	100%	0.027	0.022-0.038	4.5	5.2	2.3	Y	--	N	--	Y	Quant.
COPPER	7440-50-8	3	3	100%	0.036	0.029-0.049	36.5	68	310	N	--	N	--	N	--
CYCLOHEXANE	110-82-7	4	0	0%	0.0005	0.00047-0.00056	ND	ND	650	--	N	--	N	N	--
DIBENZO(A,H)ANTHRACENE	53-70-3	3	0	0%	0.042	0.036-0.049	ND	ND	0.11	--	N	--	N	N	--
DIBENZOFURAN	132-64-9	3	0	0%	0.041	0.036-0.047	ND	ND	7.8	--	N	--	N	N	--
DIBROMOCHLOROMETHANE	124-48-1	44	0	0%	0.0005	0.00043-0.00061	ND	ND	8.3	--	N	--	N	N	--
DICHLORODIFLUOROMETHANE	75-71-8	44	0	0%	0.0011	0.00042-0.0015	ND	ND	8.7	--	N	--	N	N	--
DIETHYL PHTHALATE	84-66-2	3	0	0%	0.042	0.037-0.049	ND	ND	5100	--	N	--	N	N	--
DIMETHYL PHTHALATE	131-11-3	3	3	100%	0.042	0.037-0.049	0.37	0.40	NA	--	--	Y	--	N	Bkg.
DI-N-BUTYLPHTHALATE	84-74-2	3	0	0%	0.046	0.04-0.053	ND	ND	630	--	N	--	N	N	--
DI-N-OCTYLPHTHALATE	117-84-0	3	0	0%	0.043	0.037-0.05	ND	ND	63	--	N	--	N	N	--
ETHYLBENZENE	100-41-4	44	0	0%	0.0005	0.00035-0.00061	ND	ND	5	--	N	--	N	N	--
FLUORANTHENE	206-44-0	3	1	33%	0.046	0.04-0.053	0.078	0.078	240	N	--	N	--	N	--
FLUORENE	86-73-7	3	0	0%	0.040	0.035-0.046	ND	ND	240	--	N	--	N	N	--
HEXACHLORO-1,3-BUTADIENE	87-68-3	3	0	0%	0.039	0.034-0.045	ND	ND	1.2	--	N	--	N	N	--

TABLE H.2-6
SOIL/SEDIMENT COPC SELECTION FOR HUMAN HEALTH
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Summary Statistics							SL (mg/kg)	COPC Selection					
		No. of Samples	No. Detected	Detection Frequency	Mean DL (mg/kg)	Range of DLs (mg/kg)	Min. Conc. (mg/kg)	Max. Conc. (mg/kg)		Is Max. Det. Conc. > SL?	Is Mean DL > SL?	Chemical Detected, No SL?	Chemical ND, No SL?	Is Chemical a COPC?	Type of Evaluation
HEXACHLOROBENZENE	118-74-1	3	0	0%	0.042	0.036-0.048	ND	ND	0.078	--	N	--	N	N	--
HEXACHLOROCYCLOPENTADIENE	77-47-4	3	0	0%	0.039	0.034-0.045	ND	ND	0.18	--	N	--	N	N	--
HEXACHLOROETHANE	67-72-1	3	0	0%	0.045	0.039-0.051	ND	ND	1.8	--	N	--	N	N	--
INDENO(1,2,3-CD)PYRENE	193-39-5	3	1	33%	0.042	0.036-0.048	0.062	0.062	1.1	N	--	N	--	N	--
ISOPHORONE	78-59-1	3	0	0%	0.040	0.035-0.047	ND	ND	570	--	N	--	N	N	--
ISOPROPYLBENZENE	98-82-8	44	0	0%	0.0006	0.00052-0.00078	ND	ND	190	--	N	--	N	N	--
LEAD	7439-92-1	3	3	100%	0.040	0.032-0.055	130	301	400	N	--	N	--	N	--
M,P-XYLENE	179601-23-1	44	0	0%	0.0010	0.00048-0.0012	ND	ND	55	--	N	--	N	N	--
MANGANESE	7439-96-5_no	3	3	100%	0.070	0.057-0.097	288	583	180	Y	--	N	--	Y	Quant.
MERCURY	7439-97-6	3	3	100%	0.016	0.013-0.023	0.087	0.21	1.1	N	--	N	--	N	--
METHYL ACETATE	79-20-9	44	0	0%	0.0014	0.00069-0.0018	ND	ND	7800	--	N	--	N	N	--
METHYL TERT-BUTYL ETHER	1634-04-4	44	0	0%	0.0005	0.00041-0.00061	ND	ND	0.3	--	N	--	N	N	--
METHYLCYLOHEXANE	108-87-2	4	0	0%	0.0004	0.00038-0.00045	ND	ND	NA	--	N	--	Y	Y	Qual.2
METHYLENE CHLORIDE	75-09-2	44	7	16%	0.0010	0.00087-0.0013	0.0012	0.0031	35	N	--	N	--	N	--
NAPHTHALENE	91-20-3	3	0	0%	0.039	0.033-0.045	ND	ND	2	--	N	--	N	N	--
NICKEL	7440-02-0	3	3	100%	0.036	0.029-0.049	10.2	11.4	150	N	--	N	--	N	--
NITROBENZENE	98-95-3	3	0	0%	0.041	0.035-0.047	ND	ND	5.1	--	N	--	N	N	--
N-NITROSO-DI-N-PROPYLAMINE	621-64-7	3	0	0%	0.041	0.036-0.047	ND	ND	0.078	--	N	--	N	N	--
N-NITROSODIPHENYLAMINE	86-30-6	3	0	0%	0.044	0.038-0.05	ND	ND	110	--	N	--	N	N	--
O-XYLENE	95-47-6	44	0	0%	0.0005	0.00042-0.00061	ND	ND	64	--	N	--	N	N	--
PENTACHLOROPHENOL	87-86-5	3	0	0%	0.035	0.03-0.041	ND	ND	1	--	N	--	N	N	--
PHENANTHRENE	85-01-8	3	0	0%	0.044	0.038-0.051	ND	ND	NA	--	N	--	Y	Y	Qual.2
PHENOL	108-95-2	3	0	0%	0.038	0.033-0.044	ND	ND	1900	--	N	--	N	N	--
PYRENE	129-00-0	3	1	33%	0.050	0.043-0.058	0.093	0.093	180	N	--	N	--	N	--
SELENIUM	7782-49-2	3	3	100%	0.633	0.51-0.87	1.1	1.8	39	N	--	N	--	N	--
SILVER	7440-22-4	3	3	100%	0.021	0.017-0.028	0.31	0.71	39	N	--	N	--	N	--
STYRENE	100-42-5	44	0	0%	0.0005	0.00043-0.00061	ND	ND	600	--	N	--	N	N	--
TETRACHLOROETHENE	127-18-4	44	7	16%	0.0005	0.00037-0.00061	0.00062	0.022	8.1	N	--	N	--	N	--
THALLIUM	7440-28-0	3	3	100%	0.049	0.04-0.068	0.18	0.28	0.078	Y	--	N	--	Y	Quant.
TOLUENE	108-88-3	44	0	0%	0.0005	0.00039-0.00061	ND	ND	9	--	N	--	N	N	--
TRANS-1,2-DICHLOROETHENE	156-60-5	44	0	0%	0.0005	0.00043-0.00061	ND	ND	7	--	N	--	N	N	--
TRANS-1,3-DICHLOROPROPENE	542-75-6	44	0	0%	0.0010	0.00046-0.0012	ND	ND	1.8	--	N	--	N	N	--
TRICHLOROETHENE	79-01-6	44	0	0%	0.0005	0.00043-0.00061	ND	ND	0.41	--	N	--	N	N	--
TRICHLOROFLUOROMETHANE	75-69-4	44	0	0%	0.0011	0.00045-0.0013	ND	ND	2300	--	N	--	N	N	--
VANADIUM	7440-62-2	3	3	100%	0.033	0.027-0.046	14.3	14.8	39	N	--	N	--	N	--
VINYL ACETATE	108-05-4	39	0	0%	0.0013	0.0011-0.0016	ND	ND	91	--	N	--	N	N	--
VINYL CHLORIDE	75-01-4	44	0	0%	0.0013	0.00037-0.0017	ND	ND	0.059	--	N	--	N	N	--
ZINC	7440-66-6	3	3	100%	0.115	0.0000	153	348	2300	N	--	N	--	N	--

Notes:

Bkg. Background analysis for detected analytes with no screening levels
CAS - chemical abstracts service
conc. - concentration
COPC - chemical of potential concern
Det. - detect
DL - detection limit
max. - maximum
mg/kg - miligrams per kilogram
N - no
NC - not calculated
ND - non-detect
No. - number
Qual.1 - qualitative analysis for infrequently detected analytes with insufficient detection limits
Qual.2 - qualitative analysis for non-detected analytes with no screening levels
Quant. - quantitative
SL - screening level
Y - yes

TABLE H.2-7
SCREENING LEVEL SUMMARY FOR HUMAN HEALTH RECEPTORS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Risk-based Screening Levels					
		Groundwater (µg/L)	Soil Gas (µg/m^3)	Indoor Air (µg/m^3)	Outdoor Air (µg/m^3)	Soil/ Sediment (mg/kg)	Surface Water (µg/L)
1,1,1,2-TETRACHLOROETHANE	630-20-6	-	-	-	-	2	-
1,1,1-TRICHLOROETHANE	71-55-6	742	17400	520	520	810	800
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.076	1.61	0.048	0.048	0.6	0.076
1,1,2-TRICHLOROETHANE	79-00-5	0.041	0.695	0.021	0.021	0.15	0.041
1,1,2-TRICHLOROTRIFLUOROETHANE	76-13-1	24.2	17400	520	520	670	1000
1,1'-BIPHENYL	92-52-4	0.083	-	-	-	4.7	0.083
1,1-DICHLOROETHANE	75-34-3	2.8	58.5	1.8	1.8	3.6	2.8
1,1-DICHLOROETHENE	75-35-4	19.5	695	21	21	23	28
1,1-DICHLOROPROPENE	563-58-6	-	-	-	-	NA	-
1,2,3-TRICHLOROBENZENE	87-61-6	0.7	-	-	-	6.3	0.7
1,2,3-TRICHLOROPROPANE	96-18-4	-	-	-	-	0.0051	-
1,2,4,5-TETRACHLOROBENZENE	95-94-3	0.017	-	-	-	0.23	0.017
1,2,4-TRICHLOROBENZENE	120-82-1	0.4	6.95	0.21	0.21	5.8	0.4
1,2,4-TRIMETHYLBENZENE	95-63-6	5.6	209	6.3	6.3	30	5.6
1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	0.00033	-	-	-	0.0053	0.00033
1,2-DIBROMOETHANE	106-93-4	0.0075	0.156	0.0047	0.0047	0.036	0.0075
1,2-DICHLOROBENZENE	95-50-1	30	695	21	21	180	30
1,2-DICHLOROETHANE	107-06-2	0.17	3.6	0.11	0.11	0.46	0.17
1,2-DICHLOROPROPANE	78-87-5	0.82	13.9	0.42	0.42	1.6	0.82
1,2-DICHLOROTETRAFLUOROETHANE;FL	76-14-2	-	NA	NA	NA	-	-
1,3,5-TRIMETHYLBENZENE	108-67-8	6	209	6.3	6.3	27	6
1,3-BUTADIENE	106-99-0	-	3.12	0.094	0.094	-	-
1,3-DICHLOROBENZENE	541-73-1	NA	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	142-28-9	-	-	-	-	160	-
1,3-DICHLOROPROPYLENE	542-75-6	0.47	23.4	0.7	0.7	1.8	0.47
1,4-DICHLOROBENZENE	106-46-7	0.48	8.51	0.26	0.26	2.6	0.48
1,4-DIOXANE	**123-91-1**	**0.46**	**18.7**	**0.56**	**0.56**	**5.3**	**0.46**
1-CHLOROHEXANE	544-10-5	-	-	-	-	NA	-
2,2-DICHLOROPROPANE	594-20-7	-	-	-	-	NA	-
2,3,4,6-TETRACHLOROPHENOL	58-90-2	24	-	-	-	190	24
2,4,5-TRICHLOROPHENOL	95-95-4	120	-	-	-	630	120
2,4,6-TRICHLOROPHENOL	88-06-2	1.2	-	-	-	6.3	1.2
2,4-DICHLOROPHENOL	120-83-2	4.6	-	-	-	19	4.6
2,4-DIMETHYLPHENOL	105-67-9	36	-	-	-	130	36
2,4-DINITROPHENOL	51-28-5	3.9	-	-	-	13	3.9
2,4-DINITROTOLUENE	121-14-2	0.24	-	-	-	1.7	0.24
2,6-DINITROTOLUENE	606-20-2	0.049	-	-	-	0.36	0.049
2-BUTANONE (MEK)	78-93-3	560	17400	520	520	2700	560
2-CHLORONAPHTHALENE	91-58-7	75	-	-	-	480	75
2-CHLOROPHENOL	95-57-8	9.1	-	-	-	39	9.1
2-CHLOROTOLUENE	95-49-8	-	-	-	-	160	-
2-HEXANONE	591-78-6	3.8	104	3.1	3.1	20	3.8
2-METHYLNAPHTHALENE	91-57-6	3.6	-	-	-	24	3.6
2-METHYLPHENOL	95-48-7	93	-	-	-	320	93
2-NITROANILINE	88-74-4	19	-	-	-	63	19
2-NITROPHENOL	88-75-5	NA	-	-	-	NA	NA
2-PHENYLBUTANE	135-98-8	-	-	-	-	780	-
3,3'-DICHLOROBENZIDINE	91-94-1	0.13	-	-	-	1.2	0.13
3-NITROANILINE	99-09-2	NA	-	-	-	NA	NA
4,4'-DDD	72-54-8	0.0063	-	-	-	-	0.0063
4,4'-DDE	72-55-9	0.046	-	-	-	-	0.046
4,4'-DDT	50-29-3	0.23	-	-	-	-	0.23
4,6-DINITRO-2-METHYLPHENOL	534-52-1	0.15	-	-	-	0.51	0.15
4-BROMOFLUOROBENZENE	460-00-4	-	NA	-	-	-	-

TABLE H.2-7
SCREENING LEVEL SUMMARY FOR HUMAN HEALTH RECEPTORS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Risk-based Screening Levels					
		Groundwater (µg/L)	Soil Gas (µg/m^3)	Indoor Air (µg/m^3)	Outdoor Air (µg/m^3)	Soil/ Sediment (mg/kg)	Surface Water (µg/L)
4-BROMOPHENYL PHENYL ETHER	101-55-3	NA	-	-	-	NA	NA
4-CHLORO-3-METHYLPHENOL	59-50-7	140	-	-	-	630	140
4-CHLOROANILINE	106-47-8	0.37	-	-	-	2.7	0.37
4-CHLOROPHENYL PHENYL ETHER	7005-72-3	NA	-	-	-	NA	NA
4-CHLOROTOLUENE	106-43-4	-	-	-	-	160	-
4-ETHYLTOLUENE	622-96-8	-	NA	NA	NA	-	-
4-METHYL-2-PENTANONE (MIBK)	108-10-1	630	10400	310	310	3300	630
4-METHYLPHENOL	106-44-5	37	-	-	-	130	37
4-NITROANILINE	100-01-6	3.8	-	-	-	25	3.8
4-NITROPHENOL	100-02-7	NA	-	-	-	NA	NA
ACENAPHTHENE	83-32-9	53	-	-	-	360	53
ACENAPHTHYLENE	208-96-8	NA	-	-	-	NA	NA
ACETONE	67-64-1	1800	NA			7000	1800
ACETOPHENONE	98-86-2	190	-	-	-	780	190
ALDRIN	309-00-2	0.00092	-	-	-	-	0.00092
ALLYL CHLORIDE	107-05-1	-	-	0.1	0.1	0.17	-
ALPHA-BHC	319-84-6	0.0072	-	-	-	-	0.0072
ALUMINUM	7429-90-5	2000	-	-	-	-	2000
ANTHRACENE	120-12-7	180	-	-	-	1800	180
ANTIMONY	7440-36-0	0.78	-	-	-	3.1	0.78
ARSENIC	7440-38-2	0.052	-	-	-	0.68	0.052
ASH	ASH	-	-	-	-	NA	-
ATRAZINE	1912-24-9	0.3	-	-	-	2.4	0.3
BARIUM	7440-39-3	380	-	-	-	1500	380
BENZALDEHYDE	100-52-7	19	-	-	-	170	19
BENZENE	71-43-2	0.46	12	0.36	0.36	0.2	0.46
BENZO(A)ANTHRACENE	56-55-3	0.03	-	-	-	1.1	0.03
BENZO(A)PYRENE	50-32-8	0.025	-	-	-	0.11	0.025
BENZO(B)FLUORANTHENE	205-99-2	0.25	-	-	-	1.1	0.25
BENZO(G,H,I)PERYLENE	191-24-2	NA	-	-	-	NA	NA
BENZO(K)FLUORANTHENE	207-08-9	2.5	-	-	-	11	2.5
BENZYL BUTYL PHTHALATE	85-68-7	16	-	-	-	290	16
BENZYL CHLORIDE	100-44-7	-	1.91	0.057	0.057	-	-
BERYLLIUM	7440-41-7	2.5	-	-	-	16	2.5
BETA-BHC	319-85-7	0.025	-	-	-	-	0.025
BIS(2-CHLOROETHOXY)METHANE	111-91-1	5.9	-	-	-	19	5.9
BIS(2-CHLOROETHYL) ETHER	111-44-4	0.014	-	-	-	0.23	0.014
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	5.6	-	-	-	39	5.6
BIS-CHLOROISOPROPYL ETHER	108-60-1	-	-	-	-	310	-
BROMOBENZENE	108-86-1	-	-	-	-	29	-
BROMOCHLOROMETHANE	74-97-5	8.3	-	-	-	15	8.3
BROMODICHLOROMETHANE	75-27-4	0.13	2.53	0.076	0.076	0.29	0.13
BROMOFORM	75-25-2	3.3	85.1	2.6	2.6	19	3.3
BROMOMETHANE	74-83-9	0.75	17.4	0.52	0.52	0.68	0.75
CADMIUM	7440-43-9_wat	0.18	-	-	-	-	0.18
CADMIUM	7440-43-9_diet	-	-	-	-	0.71	-
CAPROLACTAM	105-60-2	990	-	-	-	3100	990
CARBAZOLE	86-74-8	NA	-	-	-	NA	NA
CARBON DISULFIDE	75-15-0	81	2430	73	73	77	81
CARBON TETRACHLORIDE	56-23-5	0.415	15.6	0.47	0.47	0.65	0.46
CHLOROBENZENE	108-90-7	7.8	174	5.2	5.2	28	7.8
CHLOROETHANE	75-00-3	830	13900	420	420	540	830
CHLOROFORM	67-66-3	0.22	4.07	0.12	0.12	0.32	0.22
CHLOROMETHANE	74-87-3	19	313	9.4	9.4	11	19

TABLE H.2-7
SCREENING LEVEL SUMMARY FOR HUMAN HEALTH RECEPTORS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Risk-based Screening Levels					
		Groundwater (µg/L)	Soil Gas (µg/m^3)	Indoor Air (µg/m^3)	Outdoor Air (µg/m^3)	Soil/ Sediment (mg/kg)	Surface Water (µg/L)
CHROMIUM	7440-47-3	-	-	-	-	12000	-
CHRYSENE	218-01-9	25	-	-	-	110	25
CIS-1,2-DICHLOROETHENE	**156-59-2**	**3.6**	**NA**			**16**	**3.6**
CIS-1,3-DICHLOROPROPENE	542-75-6	0.47	23.4	0.7	0.7	1.8	0.47
CIS-CHLORDANE	5103-71-9	0.36	-	-	-	-	0.36
COBALT	7440-48-4	0.6	-	-	-	2.3	0.6
COPPER	7440-50-8	80	-	-	-	310	80
CYCLOHEXANE	110-82-7	102	20900	630	630	650	1300
CYMENE	99-87-6	-	-	-	-	NA	-
DELTA-BHC	319-86-8	NA	-	-	-	-	NA
DIBENZO(A,H)ANTHRACENE	53-70-3	0.025	-	-	-	0.11	0.025
DIBENZOFURAN	132-64-9	0.79	-	-	-	7.8	0.79
DIBROMOCHLOROMETHANE	124-48-1	0.87	NA			8.3	0.87
DIBROMOMETHANE	74-95-3	-	-	-	-	2.4	-
DICHLORODIFLUOROMETHANE	75-71-8	0.744	348	10	10	8.7	20
DICHLOROMONOFLUOROMETHANE	75-43-4	-	-	-	-	NA	-
DIELDRIN	60-57-1	0.0018	-	-	-	-	0.0018
DIETHYL PHTHALATE	84-66-2	1500	-	-	-	5100	1500
DIMETHYL PHTHALATE	131-11-3	NA	-	-	-	NA	NA
DI-N-BUTYLPHTHALATE	84-74-2	90	-	-	-	630	90
DI-N-OCTYLPHTHALATE	117-84-0	20	-	-	-	63	20
ENDOSULFAN I	115-29-7	10	-	-	-	-	10
ENDOSULFAN II	115-29-7	10	-	-	-	-	10
ENDOSULFAN SULFATE	1031-07-8	11	-	-	-	-	11
ENDRIN	72-20-8	0.23	-	-	-	-	0.23
ENDRIN ALDEHYDE	7421-93-4	NA	-	-	-	-	NA
ENDRIN KETONE	53494-70-5	NA	-	-	-	-	NA
ETHANE	74-84-0	NA	-	-	-	-	NA
ETHENE	74-85-1	NA	-	-	-	-	NA
ETHYL ACETATE	141-78-6	-	243	7.3	7.3	62	-
ETHYL ETHER	60-29-7	-	-	-	-	1600	-
ETHYL METHACRYLATE	97-63-2	-	-	-	-	180	-
ETHYLBENZENE	100-41-4	1.5	37.4	1.1	1.1	5	1.5
FLUORANTHENE	206-44-0	80	-	-	-	240	80
FLUORENE	86-73-7	29	-	-	-	240	29
FRACTION ORGANIC CARBON	FOC	-	-	-	-	NA	-
GAMMA-BHC (LINDANE)	58-89-9	0.012	-	-	-	-	0.012
HEPTACHLOR	76-44-8	0.0014	-	-	-	-	0.0014
HEPTACHLOR EPOXIDE	1024-57-3	0.0014	-	-	-	-	0.0014
HEXACHLORO-1,3-BUTADIENE	87-68-3	0.14	4.25	0.13	0.13	1.2	0.14
HEXACHLOROBENZENE	118-74-1	0.0098	-	-	-	0.078	0.0098
HEXACHLOROCYCLOPENTADIENE	77-47-4	0.0189	-	-	-	0.18	0.041
HEXACHLOROETHANE	67-72-1	0.33	-	-	-	1.8	0.33
HEXANE	110-54-3	-	2430	73	73	-	-
INDENO(1,2,3-CD)PYRENE	193-39-5	0.25	-	-	-	1.1	0.25
IRON	7439-89-6	1400	-	-	-	-	1400
ISOPHORONE	78-59-1	78	-	-	-	570	78
ISOPROPYLBENZENE	98-82-8	45	-	42	42	190	45
LEAD	7439-92-1	15	-	-	-	400	15
M,P-XYLENE	108-38-3	19	348	10	10	55	19
MANGANESE	39-96-5_non-d	43	-	-	-	180	43
MERCURY	7439-97-6	-	-	-	-	1.1	-
METHANE	74-82-8	NA	-	-	-	-	NA
METHOXYCHLOR	72-43-5	3.7	-	-	-	-	3.7

TABLE H.2-7
SCREENING LEVEL SUMMARY FOR HUMAN HEALTH RECEPTORS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Risk-based Screening Levels					
		Groundwater (µg/L)	Soil Gas (µg/m^3)	Indoor Air (µg/m^3)	Outdoor Air (µg/m^3)	Soil/ Sediment (mg/kg)	Surface Water (µg/L)
METHYL ACETATE	79-20-9	2000	-	-	-	7800	2000
METHYL IODIDE	74-88-4	-	-	-	-	NA	-
METHYL TERT-BUTYL ETHER	1634-04-4	14	360	11	11	0.3	14
METHYLCYLOHEXANE	108-87-2	NA	-	-	-	NA	NA
METHYLENE CHLORIDE	75-09-2	11	2090	63	63	35	11
NAPHTHALENE	91-20-3	0.12	-	0.083	0.083	2	0.12
N-BUTYLBENZENE	104-51-8	-	-	-	-	390	-
N-HEPTANE	142-82-5	-	1390	42	42	-	-
NICKEL	7440-02-0	39	-	-	-	150	39
NITROBENZENE	98-95-3	0.14	-	-	-	5.1	0.14
N-NITROSO-DI-N-PROPYLAMINE	621-64-7	0.011	-	-	-	0.078	0.011
N-NITROSODIPHENYLAMINE	86-30-6	12	-	-	-	110	12
N-PROPYLBENZENE	103-65-1	-	-	100	100	380	-
ORGANIC MATTER	OM	-	-	-	-	NA	-
O-XYLENE	95-47-6	19	348	10	10	64	19
PENTACHLOROETHANE	76-01-7	-	-	-	-	7.7	-
PENTACHLOROPHENOL	87-86-5	0.041	-	-	-	1	0.041
PHENANTHRENE	85-01-8	NA	-	-	-	NA	NA
PHENOL	108-95-2	580	-	-	-	1900	580
PYRENE	129-00-0	12	-	-	-	180	12
SELENIUM	7782-49-2	10	-	-	-	39	10
SILVER	7440-22-4	9.4	-	-	-	39	9.4
STYRENE	100-42-5	120	3480	100	100	600	120
TERT-BUTYLBENZENE	98-06-6	-	-	-	-	780	-
TETRACHLOROETHENE	**127-18-4**	**4.1**	**139**	**4.2**	**4.2**	**8.1**	**4.1**
TETRAHYDROFURAN	109-99-9	-	6950	210	210	1800	-
THALLIUM	7440-28-0	0.02	-	-	-	0.078	0.02
TOLUENE	108-88-3	110	17400	520	520	9	110
TOXAPHENE	8001-35-2	0.071	-	-	-	-	0.071
TRANS-1,2-DICHLOROETHENE	**156-60-5**	**6.8**	**139**	**4.2**	**4.2**	**7**	**6.8**
TRANS-1,3-DICHLOROPROPENE	542-75-6	0.47	23.4	0.7	0.7	1.8	0.47
TRANS-1,4-DICHLOROBUTENE	110-57-6	-	-	-	-	0.0074	-
TRANS-CHLORDANE	5103-74-2	1	-	-	-	-	1
TRICHLOROETHENE	**79-01-6**	**0.28**	**6.95**	**0.21**	**0.21**	**0.41**	**0.28**
TRICHLOROFLUOROMETHANE	75-69-4	520	NA			2300	520
VANADIUM	7440-62-2	8.6	-	-	-	39	8.6
VINYL ACETATE	108-05-4	41	695	21	21	91	41
VINYL CHLORIDE	**75-01-4**	**0.019**	**5.59**	**0.17**	**0.17**	**0.059**	**0.019**
ZINC	7440-66-6	600	-	-	-	2300	600

Notes:
Screening levels based upon a target hazard quotient of 0.1 and a target cancer risk of 1E-06.
Site-related chemicals are shown in **bold** text.

TABLE H.2-8
HUMAN HEALTH RECEPTOR COPCs SELECTED FOR QUANTITATIVE ASSESSMENT
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Groundwater	Soil Gas	Indoor Air	Outdoor Air	Soil/ Sediment	Surface Water
1,1,2,2-TETRACHLOROETHANE	79-34-5	Qual.1		Quant.	Qual.1		Qual.1
1,1,2-TRICHLOROETHANE	79-00-5	Qual.1		Quant.	Qual.1		Qual.1
1,2,4-TRICHLOROBENZENE	120-82-1		Qual.1	Quant.	Qual.1		
1,2,4-TRIMETHYLBENZENE	95-63-6			Quant.			
1,2-DIBROMOETHANE	106-93-4	Qual.1	Qual.1	Quant.	Qual.1		Qual.1
1,2-DICHLOROETHANE	107-06-2			Quant.	Quant.		
1,2-DICHLOROPROPANE	78-87-5			Quant.			
1,3,5-TRIMETHYLBENZENE	108-67-8			Quant.			
1,3-BUTADIENE	106-99-0		Quant.	Quant.	Quant.		
1,4-DICHLOROBENZENE	106-46-7			Quant.			
1,4-DIOXANE	**123-91-1**	**Quant.**		**Quant.**	**Quant.**		
2-HEXANONE	591-78-6	Quant.					
ALUMINUM	7429-90-5	Quant.					Quant.
ANTIMONY	7440-36-0	Quant.					Quant.
ARSENIC	7440-38-2	Quant.				Quant.	Quant.
BARIUM	7440-39-3	Quant.					
BENZENE	71-43-2	Quant.	Quant.	Quant.	Quant.		Quant.
BENZYL CHLORIDE	100-44-7			Quant.	Qual.1		
BERYLLIUM	7440-41-7	Quant.					
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	Quant.					Quant.
BROMODICHLOROMETHANE	75-27-4	Quant.	Quant.	Quant.	Qual.1		Quant.
BROMOMETHANE	74-83-9			Quant.	Qual.1		
CADMIUM	7440-43-9	Quant.				Quant.	Quant.
CARBON TETRACHLORIDE	56-23-5			Quant.	Quant.		
CHLOROFORM	67-66-3	Quant.	Quant.	Quant.	Quant.		Quant.
CIS-1,2-DICHLOROETHENE	**156-59-2**	**Quant.**	**Bkg.**	**Bkg.**			
COBALT	7440-48-4	Quant.				Quant.	Quant.
COPPER	7440-50-8	Quant.					Quant.
DIBROMOCHLOROMETHANE	124-48-1	Quant.	Bkg.	Bkg.			
ETHYL ACETATE	141-78-6		Quant.	Quant.	Quant.		
ETHYLBENZENE	100-41-4	Quant.		Quant.	Quant.		
HEXACHLORO-1,3-BUTADIENE	87-68-3	Qual.1	Qual.1	Quant.	Qual.1		Qual.1
IRON	7439-89-6	Quant.					Quant.
ISOPROPYL ALCOHOL	67-63-0			Quant.			
LEAD	7439-92-1	Quant.					Quant.
M,P-XYLENE	108-38-3			Quant.	Quant.		
MANGANESE	7439-96-5	Quant.				Quant.	Quant.
METHYLENE CHLORIDE	75-09-2			Quant.			
NAPHTHALENE	91-20-3	Qual.1		Quant.			Qual.1
NICKEL	7440-02-0	Quant.					
O-XYLENE	95-47-6			Quant.			
TETRACHLOROETHENE	**127-18-4**	**Quant.**	**Quant.**	**Quant.**	**Quant.**		**Quant.**
THALLIUM	7440-28-0	Quant.				Quant.	Quant.
TRICHLOROETHENE	**79-01-6**	**Quant.**	**Quant.**	**Quant.**	**Quant.**		**Quant.**
VANADIUM	7440-62-2	Quant.					Quant.
VINYL ACETATE	108-05-4			Quant.			
VINYL CHLORIDE	**75-01-4**	**Qual.1**		**Quant.**			**Qual.1**
ZINC	7440-66-6	Quant.					Quant.

Notes:
Site-related COPCs are shown in **bold** text.
Shaded cells indicate COPCs retained for further quantitative evaluation.
COPC - chemical of potential concern

COPC Outcome:
Null - no further evaluation necessary
Bkg. - background analysis for detected analytes with no screening levels
Qual.1 - qualitative analysis for infrequently detected analytes with insufficient detection limits
Qual.2 - qualitative analysis for non-detected analytes with no screening levels
Quant. - quantitative analysis for detected analytes with screening levels

TABLE H.2-9
REFINED SURFACE WATER COPC EVALUATION FOR CONTACT WITH SEEP/SPRING SURFACE WATER
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

COPC	CAS Number	Summary Statistics						EPA Residential Tap Water RSL (µg/L) [a]	Seep/Spring Surface Water SL (µg/L) [b]				Based on Max. Conc.		
		No. of Samples	No. Detected	Detection Frequency	Mean Conc. (µg/L)	Min. Conc. (µg/L)	Max. Conc. (µg/L)		Ing.	Derm.	Inhal.	All Routes	> SW SL?	Cancer Risk	Non-Cancer HI
BENZENE	71-43-2	100	4	4%	0.27	0.13	0.50	0.46	52	53	32	14	N	4E-08	5E-04
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	38	3	8%	31	3.6	84	5.6	203	NA	NA	203	N	4E-07	6E-03
BROMODICHLOROMETHANE	75-27-4	100	25	25%	0.20	0.09	0.68	0.13	46	119	7	5.5	N	1E-07	7E-05
CHLOROFORM	67-66-3	100	71	71%	1.5	0.11	6.3	0.22	92	173	11	9.1	N	7E-07	2E-03
TETRACHLOROETHENE	127-18-4	100	78	78%	16	0.13	82	4.1	439	117	365	74	Y	3E-07	1E-01
TRICHLOROETHENE	79-01-6	100	58	58%	0.78	0.09	4.6	0.28	37	33	18	9	N	3E-07	5E-02

[a] Based on a target hazard quotient of 0.1 and a target cancer risk of 1E-06.

[b] The seep/spring surface water SL was derived based on the default residential tap water RSL, but scaled to reduce the exposure frequency from 350 days per year to 96 days per year water contact (assuming seep/spring contact occurs 3 days per week for 8 months of the year), reducing the water ingestion rate from 0.78 liters per day (the default drinking water rate) to 0.16 liters per day (assuming an incidential surface water rate is 10% of the total daily drinking water intake rate), reducing the inhalation exposure time from 24 hours per day to 2 hours per day, and reducing the skin surface area from a whole-body bathing scenario to only the head, hands, forearms, lower legs, and feet.

Notes:
CAS - chemical abstracts service
µg/L - micrograms per liter
conc. - concentration
COPC - chemical of potential concern
max. - maximum
min. - minimum
N - no
NA - not available
No. - number
RSL - EPA regional screening level
SL - screening level
Y - yes

TABLE H.2-10
REFINED SHALLOW GROUNDWATER COPC EVALUATION FOR RESIDENTIAL AND OUTDOOR WORKER CONTACT DURING DIGGING
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Summary Statistics						EPA Residential Tap Water RSL (µg/L) [a]	Digging Groundwater SL (µg/L) [b]				Based on Max. Conc.		
		No. of Samples	No. Detected	Detection Frequency	Mean Conc. (µg/L)	Min. Conc. (µg/L)	Max. Conc. (µg/L)		Ing.	Derm.	Inhal.	All Routes	> GW SL?	Cancer Risk	Non-Cancer HI
1,4-DIOXANE	123-91-1	218	8	4%	0.57	0.18	2.7	0.46	85	3,690	147	53	N	5E-08	4E-04
2-HEXANONE	591-78-6	479	13	3%	5.1	2.8	12	3.8	1,100	3,690	821	417	N	NA	3E-03
BENZENE	71-43-2	479	72	15%	1.38	0.11	20	0.46	155	158	95	43	N	5E-07	7E-03
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	124	8	6%	59	4.2	150	5.6	609	NA	NA	609	N	2E-07	3E-03
BROMODICHLOROMETHANE	75-27-4	479	258	54%	0.34	0.10	6.0	0.13	137	358	20	17	N	4E-07	2E-04
CHLOROFORM	67-66-3	479	423	88%	3.0	0.13	13	0.22	275	520	32	27	N	5E-07	1E-03
CIS-1,2-DICHLOROETHENE	156-59-2	505	137	27%	0.52	0.10	3.9	3.6	439	488	NA	231	N	NA	2E-03
DIBROMOCHLOROMETHANE	124-48-1	479	4	1%	0.86	0.16	2.4	0.87	101	276	NA	74	N	3E-08	8E-05
ETHYLBENZENE	100-41-4	479	30	6%	0.55	0.10	3.3	1.5	775	225	295	110	N	3E-08	9E-05
TETRACHLOROETHENE	127-18-4	505	336	67%	29	0.13	230	4.1	1,320	351	1,100	221	Y	3E-07	1E-01
TRICHLOROETHENE	79-01-6	505	210	42%	0.90	0.1	12	0.28	110	100	55	27	N	3E-07	4E-02

[a] Based on a target hazard quotient of 0.1 and a target cancer risk of 1E-06.

[b] The shallow groundwater SL for a digging scenario was derived based on the default residential tap water RSL, but scaled to reduce the exposure frequency from 350 days per year to 32 days per year (assuming shallow groundwater contact occurs once per week for 8 months of the year), assuming 10% of the total water ingestion rate is derived from shallow groundwater, and reducing the inhalation exposure time from 24 hours per day to 2 hours per day (assumed daily digging time).

Notes:
CAS - chemical abstracts service
µg/L - micrograms per liter
conc. - concentration
COPC - chemical of potential concern
max. - maximum
min. - minimum
N - no
NA - not available
No. - number
RSL - EPA regional screening level
SL - screening level
Y - yes

Table H.2-11 Dermal Absorption Fraction and Permeability Coefficients
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

COPC	CASRN	Dermal Absorption Fraction (ABSd)[a]	Dermal Permeability Coefficient (Kp) (cm/hr)[c]	Fraction absorbed water (FA) (unitless)	Permeability coefficient ratio (B) (unitless)[c]	Lag time per event (Tevent) (hrs/event)	Time to reach steady state (t*) (hrs)
SVOCs							
1,4-DIOXANE	**123-91-1**	0.10	3.32E-04	1	1.20E-03	0.328	0.7872
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	0.10	1.13E+00	0.8	8.59E+00	16.2	38.88
VOCs							
1,1,2,2-TETRACHLOROETHANE	79-34-5	--[b]	6.94E-03	1	3.46E-02	0.916	2.1984
1,1,2-TRICHLOROETHANE	79-00-5	--[b]	5.04E-03	1	2.24E-02	0.587	1.4088
1,2,4-TRICHLOROBENZENE	120-82-1	--[b]	7.05E-02	1	3.65E-01	1.09	2.616
1,2,4-TRIMETHYLBENZENE	95-63-6	--[b]	8.57E-02	1	3.61E-01	0.495	1.188
1,2-DIBROMOETHANE	106-93-4	--[b]	2.78E-03	1	1.47E-02	1.19	2.856
1,2-DICHLOROETHANE	107-06-2	--[b]	4.20E-03	1	1.61E-02	0.377	0.9048
1,2-DICHLOROPROPANE	78-87-5	--[b]	7.53E-03	1	3.08E-02	0.451	1.0824
1,3-BUTADIENE	106-99-0	--[b]	1.64E-02	1	4.64E-02	0.211	0.5064
1,3,5-TRIMETHYLBENZENE	108-67-8	--[b]	6.21E-02	1	2.62E-01	0.495	1.188
1,4-DICHLOROBENZENE	106-46-7	--[b]	4.53E-02	1	2.11E-01	0.7	1.68
2-HEXANONE	591-78-6	--[b]	3.55E-03	1	1.37E-02	0.383	0.9192
BENZENE	71-43-2	--[b]	1.49E-02	1	5.07E-02	0.288	0.6912
BENZYL CHLORIDE	100-44-7	--[b]	1.03E-02	1	4.46E-02	0.538	1.2912
BROMODICHLOROMETHANE	75-27-4	--[b]	4.02E-03	1	1.98E-02	0.87	2.088
BROMOMETHANE	74-83-9	--[b]	2.84E-03	1	1.06E-02	0.358	0.8592
CARBON TETRACHLORIDE	56-23-5	--[b]	1.63E-02	1	7.78E-02	0.764	1.8336
CHLOROFORM	67-66-3	--[b]	6.83E-03	1	2.87E-02	0.49	1.176
CIS-1,2-DICHLOROETHENE	**156-59-2**	--[b]	1.10E-02	1	4.17E-02	0.367	0.8808
DIBROMOCHLOROMETHANE	124-48-1	--[b]	2.89E-03	1	1.60E-02	1.54	3.696
ETHYL ACETATE	141-78-6	--[b]	1.53E-03	1	5.52E-03	0.328	0.7872
ETHYLBENZENE	100-41-4	--[b]	4.93E-02	1	1.95E-01	0.413	0.9912
HEXACHLORO-1,3-BUTADIENE	87-68-3	--[b]	8.10E-02	0.9	5.03E-01	3.03	7.272
ISOPROPYL ALCOHOL	67-63-0	--[b]	7.78E-04	1	2.32E-03	0.228	0.5472
METHYLENE CHLORIDE	75-09-2	--[b]	3.54E-03	1	1.25E-02	0.314	0.7536
NAPHTHALENE	91-20-3	--[b]	4.66E-02	1	2.03E-01	0.549	1.3176
O-XYLENE	95-47-6	--[b]	4.71E-02	1	1.87E-01	0.413	0.9912
TETRACHLOROETHENE	**127-18-4**	--[b]	3.34E-02	1	1.65E-01	0.892	2.1408
TRICHLOROETHENE	**79-01-6**	--[b]	1.16E-02	1	5.11E-02	0.572	1.3728
VINYL ACETATE	108-05-4	--[b]	1.57E-03	1	5.60E-03	0.319	0.7656
VINYL CHLORIDE	**75-01-4**	--[b]	8.38E-03	1	2.55E-02	0.235	0.564

Notes:

-- - not available

[a] Absorption fractions from EPA 2004 dermal guidance: Exhibit 3-4

[b] Volatile chemicals are not evaluated for dermal pathway (EPA 2004)

[c] Permeability coefficients from EPA RSL tables (May 2022 version)

TABLE H.2-12
RESIDENTIAL EXPOSURE PARAMETERS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Exposure Parameter		Units	Residential Exposure Parameters											
			Central Tendency Exposure (CTE)						Reasonable Maximum Exposure (RME)					
			Child			Adult			Child			Adult		
			Value	Source	Notes	Value	Source	Notes	Value	Source	Notes	Value	Source	Notes
General Parameters														
Body Weight	BW	kg	15	EPA 2014	a	80	EPA 2014	a	15	EPA 2014	a	80	EPA 2014	a
Exposure Frequency	EF	d/yr	234	EPA 1993		234	EPA 1993		350	EPA 2014	a	350	EPA 2014	a
Exposure Duration	ED	years	2	EPA 1993		7	EPA 1993		6	EPA 2014	a	20	EPA 2014	a
Averaging Time, non-cancer	AT_{nc}	days	730	EPA 1989	b	2,555	EPA 1989	b	2,190	EPA 1989	b	7,300	EPA 1989	b
		hours	17,520	EPA 1989	b	61,320	EPA 1989	b	52,560	EPA 1989	b	175,200	EPA 1989	b
Averaging Time, cancer	AT_c	days	25,550	EPA 1989	b	25,550	EPA 1989	b	25,550	EPA 1989	b	25,550	EPA 1989	b
		hours	613,200	EPA 1989	b	613,200	EPA 1989	b	613,200	EPA 1989	b	613,200	EPA 1989	b
Ingestion of Deep Groundwater (as Potable Drinking Water)														
Ingestion Rate	IRgw	L/d	0.33	EPA 2019	g	1.28	EPA 2019	g	0.78	EPA 2014	a	2.5	EPA 2014	a
HIF_{nc}		**L/kg/d**	**1.42E-02**			**1.02E-02**			**4.99E-02**			**3.00E-02**		
HIF_c - by receptor		**L/kg/d**	**4.05E-04**			**1.02E-03**			**4.27E-03**			**8.56E-03**		
HIF_c		**L/kg/d**	**1.43E-03**						**1.28E-02**					
Dermal Contact with Deep Groundwater (During Showering)														
Skin Surface Area	SA_s	cm^2	6,100	EPA 2011	h	18,400	EPA 2011		6,365	EPA 2014	i	19,652	EPA 2014	i
Showering Time	t_{event}	hr/event	0.37	EPA 2011	h	0.28	EPA 2011		0.54	EPA 2014	a	0.71	EPA 2014	a
Showering Frequency	EV	events/day	1	Assumed	e	1	Assumed	e	1	Assumed	e	1	Assumed	e
HIF_{nc}		**cm^2-event/kg-day**	**2.61E+02**			**1.47E+02**			**4.07E+02**			**2.36E+02**		
HIF_c - by receptor		**cm^2-event/kg-day**	**7.45E+00**			**1.47E+01**			**3.49E+01**			**6.73E+01**		
HIF_c		**cm^2-event/kg-day**	**2.22E+01**						**1.02E+02**					
Inhalation of Volatiles (During Domestic Activities)														
Volatilization Factor	K	L/m^3	0.50	EPA 2021	d	0.50	EPA 2021	d	0.50	EPA 2021	d	0.50	EPA 2021	d
Exposure Time	t_{event}	hr/day	1.1	Assumed	e	0.84	Assumed	e	24	EPA 2014	a	24	EPA 2014	a
Conversion Factor	CF	ug/mg	1000			1000			1000			1000		
TWF_{nc}		**mg-L/ug-m^3**	**1.48E-05**			**1.12E-05**			**4.79E-04**			**4.79E-04**		
TWF_c - by receptor		**mg-L/ug-m^3**	**4.24E-07**			**1.12E-06**			**4.11E-05**			**1.37E-04**		
TWF_c		**mg-L/ug-m^3**	**1.55E-06**						**1.78E-04**					
Inhalation of Indoor Air														
Exposure Time	ET	hr/d	22.7	EPA 2014	p	19.3	EPA 2014	p	24	EPA 2014	a	24	EPA 2014	a
TWF_{nc}		**--**	**6.07E-01**			**5.16E-01**			**9.59E-01**			**9.59E-01**		
TWF_c - by receptor		**--**	**1.74E-02**			**5.16E-02**			**8.22E-02**			**2.74E-01**		
TWF_c		**--**	**6.89E-02**						**3.56E-01**					
Inhalation of Outdoor Air														
Exposure Time	ET	hr/d	1.3	EPA 2011	p	4.7	EPA 2011	p	1.3	EPA 2011	p	4.7	EPA 2011	p
TWF_{nc}		**--**	**3.38E-02**			**1.25E-01**			**5.06E-02**			**1.87E-01**		
TWF_c - by receptor		**--**	**9.67E-04**			**1.25E-02**			**4.34E-03**			**5.35E-02**		
TWF_c		**--**	**1.35E-02**						**5.78E-02**					

Sources:

EPA 1989: RAGS Part A, EPA/540/1-89/002

EPA 1993: Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure. DRAFT. EPA 600-D-93-901

EPA 2002: Supplemental Soil Screening Guidance, OSWER 9355.4-24

EPA 2004: RAGS Part E, EPA/540/R/99/005

EPA 2011: Exposure Factors Handbook. EPA/600/R-090/052F

EPA 2014: Default RME Exposure Parameters, OSWER Directive 9200.1-120

EPA 2017: Update for Chapter 5 of the Exposure Factors Handbook. EPA/600/R-17/384F

EPA 2019: Update for Chapter 3 of the Exposure Factors Handbook. EPA/600/R-18/259F

ORNL 2021: RAIS Chemical Risk Calculator

Notes:

a -- Standard default value for residential exposure

b -- AT (days) = ED x 365 days/yr and AT (hours) = ED x 365 days/yr x 24 hours/day, where ED for non-cancer is set equal to the receptor-specific duration and ED for cancer is 70 years.

c -- Assumed for ages 1 to < 6 years of age.

d -- Standard default PEF for windblown emissions

e -- Professional judgment

f -- Standard default for residential dermal exposures to soil (includes head, hands, forearms, lower legs, and feet)

TABLE H.2-12
RESIDENTIAL EXPOSURE PARAMETERS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

g -- Mean drinking water ingestion rate for consumers only for children aged 2 to 3 and adults aged 21 to < 50.
h -- Standard default for children aged 2-3.
i -- Standard default for residential dermal exposures to water (whole body)
j -- CTE produce ingestion rates assumed to be half the RME.
k -- Standard default for dermal exposures to workers (exposed skin)
l -- Assumed that exposure to seeps occurs for one hour, three days per week, six months per year for RME. The CTE assumptions are half these values.
m -- Assumed that exposure to sprinklers occurs once per week from June to September for CTE and three times per week for RME.
n -- Based upon the mean and 95th percentile volumes of water ingested during a simulated car wash activity and adjusted for hourly exposures.
o -- RME weighted adherence factor based upon children playing in sediment and adults clamming, CTE value is half the RME.
p -- Outdoor activity time (281 minutes/day for adults, and 76 minutes/day for children aged 2-3) per EPA 2011 adopted.
q -- Chemical specific volatilization factor as derived by Equation 4-8 in EPA 2002.

cm^2 = square centimeters
cm^2-hr/kg-day = square centimeters per hour per kilogram body weight per day
d/yr = days per year
EPA = U.S. Environmental Protection Agency
events/day = events per day
HIF_c = human intake factor, cancer
HIF_{nc} = human intake factor, non-cancer
hr/d = hours per day
hr/event = hours per event
kg = kilograms
kg ww/kg/d = kilograms (wet weight) per kilogram body weight per day
kg ww/meal = kilograms (wet weight) per meal
kg/kg/d = kilograms per kilogram body weight per day
kg/mg = kilograms per milligram
L/d = liters per day
m^3/kg = cubic meters per kilogram
meals/yr = meals per year
mg/cm^2 = milligrams per square centimeter
mg/d = milligrams per day

TABLE H.2-13
STUDENT EXPOSURE PARAMETERS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Exposure Parameter		Units	Student Exposure Parameters											
			Central Tendency Exposure (CTE)						Reasonable Maximum Exposure (RME)					
			Child (age 6 to < 11)			Adolescent (age 11 to < 16)			Child (age 6 to < 11)			Adolescent (age 11 to < 16)		
			Value	Source	Notes	Value	Source	Notes	Value	Source	Notes	Value	Source	Notes
General Parameters														
Body Weight	BW	kg	31.8	EPA 2011	a	56.8	EPA 2011	a	31.8	EPA 2011	a	56.8	EPA 2011	a
Exposure Time	ET	hr/day	6	US DoEd	c	7	US DoEd	c	6	US DoEd	c	7	US DoEd	c
Exposure Frequency	EF	d/yr	180	US DoEd	c	180	US DoEd	c	180	US DoEd	c	180	US DoEd	c
Exposure Duration	ED	years	7	Grades K-6		6	Grades 7-12		7	Grades K-6		6	Grades 7-12	
Averaging Time, non-cancer	AT_{nc}	days	2,555	EPA 1989	b	2,190	EPA 1989	b	2,555	EPA 1989	b	2,190	EPA 1989	b
		hours	61,320	EPA 1989	b	52,560	EPA 1989	b	61,320	EPA 1989	b	52,560	EPA 1989	b
Averaging Time, cancer	AT_c	days	25,550	EPA 1989	b	25,550	EPA 1989	b	25,550	EPA 1989	b	25,550	EPA 1989	b
		hours	613,200	EPA 1989	b	613,200	EPA 1989	b	613,200	EPA 1989	b	613,200	EPA 1989	b
Inhalation of Indoor Air														
Exposure Time	ET	hr/d	5	Assumed	d	6	Assumed	d	5	Assumed	d	6	Assumed	d
TWF_{nc}		--	**1.03E-01**			**1.23E-01**			**1.03E-01**			**1.23E-01**		
TWF_c - by receptor		--	**1.03E-02**			**1.06E-02**			**1.03E-02**			**1.06E-02**		
TWF_c		--	**2.08E-02**						**2.08E-02**					
Inhalation of Outdoor Air														
Exposure Time	ET	hr/d	1	Assumed	d	1	Assumed	d	1	Assumed	d	1	Assumed	d
TWF_{nc}		--	**2.05E-02**			**2.05E-02**			**2.05E-02**			**2.05E-02**		
TWF_c - by receptor		--	**2.05E-03**			**1.76E-03**			**2.05E-03**			**1.76E-03**		
TWF_c		--	**3.82E-03**						**3.82E-03**					

Sources:

EPA 1989: RAGS Part A, EPA/540/1-89/002

EPA 2011: Exposure Factors Handbook. EPA/600/R-090/052F

EPA 2019: Update for Chapter 3 of the Exposure Factors Handbook. EPA/600/R-18/259F

US DoED: Average length of school year and average length of school day, by selected characteristics: United States, 2001-02 https://nces.ed.gov/surveys/pss/tables/table_15.asp

Notes:

a -- Mean body weights for ages 6 to < 11 years and 11 to < 16 years.

b -- AT (days) = ED x 365 days/yr and AT (hours) = ED x 365 days/yr x 24 hours/day, where ED for non-cancer is set equal to the receptor-specific duration and ED for cancer is 70 years.

c -- Length and number of school days based upon data from the US Department of Education.

d -- Indoor air exposure period anticipated to be equal to the length of the school day, excluding approximately 1 hour outdoors per day for recess, lunch, and/or gym time.

d/yr = days per year

EPA = U.S. Environmental Protection Agency

events/day = events per day

hr/d = hours per day

hr/event = hours per event

kg = kilograms

TWF_c = time-weighting factor, cancer

TWF_{nc} = time-weighting factor, non-cancer

TABLE H.2-14
DAYCARE CHILDREN EXPOSURE PARAMETERS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Exposure Parameter		Units	Daycare Children Exposure Parameters					
			CTE			RME		
			Value	Source	Notes	Value	Source	Notes
General Parameters								
Body Weight	BW	kg	15	EPA 2014	a	15	EPA 2011	a
Exposure Time	ET	hr/day	1.2	EPA 2011	c	5.3	EPA 2011	c
Exposure Frequency	EF	d/yr	219	EPA 2004		250	EPA 2014	a
Exposure Duration	ED	years	6	Birth to Age 6		6	Birth to Age 6	
Averaging Time, non-cancer	AT_{nc}	days	2,190	EPA 1989	b	2,190	EPA 1989	b
		hours	52,560	EPA 1989	b	52,560	EPA 1989	b
Averaging Time, cancer	AT_c	days	25,550	EPA 1989	b	25,550	EPA 1989	b
		hours	613,200	EPA 1989	b	613,200	EPA 1989	b
Inhalation of Indoor Air								
Exposure Time	ET	hr/d	1.0	Assumed	d	4.2	Assumed	d
	TWF_{nc}	--	**2.47E-02**			**1.20E-01**		
	TWF_c	--	**2.11E-03**			**1.03E-02**		
Inhalation of Outdoor Air								
Exposure Time	ET	hr/d	0.2	Assumed	e	1.1	Assumed	e
	TWF_{nc}	--	**6.17E-03**			**3.01E-02**		
	TWF_c	--	**5.29E-04**			**2.58E-03**		

Sources:

EPA 1989: RAGS Part A, EPA/540/1-89/002

EPA 2011: Exposure Factors Handbook. EPA/600/R-090/052F

EPA 2019: Update for Chapter 3 of the Exposure Factors Handbook. EPA/600/R-18/259F

U.S. DoED: Average length of school year and average length of school day, by selected characteristics United States, 2001-02 https://nces.ed.gov/surveys/pss/tables/table_15.asp

Notes:

a -- Mean body weights for ages 6 to < 11 and 11 to < 16.

b -- AT (days) = ED x 365 days/yr and AT (hours) = ED x 365 days/yr x 24 hours/day, where ED for non-cancer is set equal to the receptor-specific duration and ED for cancer is 70 years.

c -- Based upon Table 16-11 of the exposure factors handbook for children aged 2-3 at school/childcare for the CTE, and the mean education time for children under 12 years of age per Table 16-7 of the EFH for the RME.

d -- Indoor air exposure period anticipated to be equal to approximately 80% of the time spent at daycare.

e -- Outdoor air exposure period anticipated to be equal to approximately 20% of the time spent at daycare.

d/yr = days per year

EPA = U.S. Environmental Protection Agency

events/day = events per day

hr/d = hours per day

hr/event = hours per event

kg = kilograms

TABLE H.2-15
INDOOR WORKER EXPOSURE PARAMETERS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Exposure Parameter		Units	Indoor Workers Exposure Parameters					
			CTE			RME		
			Value	Source	Notes	Value	Source	Notes
General Parameters								
Body Weight	BW	kg	80	EPA 2014	a	80	EPA 2014	a
Exposure Time	ET	hr/day	8	EPA 2014	a	8	EPA 2014	a
Exposure Frequency	EF	d/yr	219	EPA 2004		250	EPA 2014	a
Exposure Duration	ED	years	6.7	EPA 2011	c	25	EPA 2014	a
Averaging Time, non-cancer	AT_{nc}	days	2,436	EPA 1989	b	9,125	EPA 1989	b
		hours	58,473	EPA 1989	b	219,000	EPA 1989	b
Averaging Time, cancer	AT_c	days	25,550	EPA 1989	b	25,550	EPA 1989	b
		hours	613,200	EPA 1989	b	613,200	EPA 1989	b
Inhalation of Indoor Air								
Exposure Time	ET	hr/d	8	EPA 2014	a	8	EPA 2014	a
	TWF_{nc}	--	**2.00E-01**			**2.28E-01**		
	TWF_c	--	**1.91E-02**			**8.15E-02**		

Sources:

EPA 1989: RAGS Part A, EPA/540/1-89/002

EPA 1993: Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure. DRAFT. EPA 600-D-93-901

EPA 2002: Supplemental Soil Screening Guidance, OSWER 9355.4-24

EPA 2004: RAGS Part E, EPA/540/R/99/005

EPA 2011: Exposure Factors Handbook. EPA/600/R-090/052F

EPA 2014: Default RME Exposure Parameters, OSWER Directive 9200.1-120

EPA 2017: Update for Chapter 5 of the Exposure Factors Handbook. EPA/600/R-17/384F

EPA 2019: Update for Chapter 3 of the Exposure Factors Handbook. EPA/600/R-18/259F

ORNL 2021: RAIS Chemical Risk Calculator

Notes:

a -- Standard default value for indoor worker exposure

b -- AT (days) = ED x 365 days/yr and AT (hours) = ED x 365 days/yr x 24 hours/day, where ED for non-cancer is set equal to the receptor-specific duration and ED for cancer is 70 years.

c -- Average occupational tenure for adult men and women over 16 years of age.

d/yr = days per year

EPA = U.S. Environmental Protection Agency

events/day = events per day

hr/d = hours per day

hr/event = hours per event

kg = kilograms

TABLE H.2-16
OUTDOOR WORKER EXPOSURE PARAMETERS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Exposure Parameter		Units	Outdoor Worker Exposure Parameters					
			CTE			RME		
			Value	Source	Notes	Value	Source	Notes
General Parameters								
Body Weight	BW	kg	80	EPA 2014	a	80	EPA 2014	a
Exposure Time	ET	hr/day	8	EPA 2014	a	8	EPA 2014	a
Exposure Frequency	EF	d/yr	219	EPA 2004		250	EPA 2014	a
Exposure Duration	ED	years	2.0	Assumed	c	25	EPA 2014	a
Averaging Time, non-cancer	AT_{nc}	days	730	EPA 1989	b	9,125	EPA 1989	b
		hours	17,520	EPA 1989	b	219,000	EPA 1989	b
Averaging Time, cancer	AT_c	days	25,550	EPA 1989	b	25,550	EPA 1989	b
		hours	613,200	EPA 1989	b	613,200	EPA 1989	b
Inhalation of Outdoor Air								
Exposure Time	ET	hr/d	8	EPA 2014	a	8	EPA 2014	a
	TWF_{nc}	--	**2.00E-01**			**2.28E-01**		
	TWF_c	--	**5.71E-03**			**8.15E-02**		

Sources:

EPA 1989: RAGS Part A, EPA/540/1-89/002

EPA 1993: Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure. DRAFT. EPA 600-D-93-901

EPA 2002: Supplemental Soil Screening Guidance, OSWER 9355.4-24

EPA 2004: RAGS Part E, EPA/540/R/99/005

EPA 2011: Exposure Factors Handbook. EPA/600/R-090/052F

EPA 2014: Default RME Exposure Parameters, OSWER Directive 9200.1-120

EPA 2017: Update for Chapter 5 of the Exposure Factors Handbook. EPA/600/R-17/384F

EPA 2019: Update for Chapter 3 of the Exposure Factors Handbook. EPA/600/R-18/259F

ORNL 2021: RAIS Chemical Risk Calculator

Notes:

a -- Standard default value for outdoor worker exposure

b -- AT (days) = ED x 365 days/yr and AT (hours) = ED x 365 days/yr x 24 hours/day, where ED for non-cancer is set equal to the receptor-specific duration and ED for cancer is 70 years.

c -- Assumed that projects at the site would be limited to two years in duration.

d/yr = days per year

EPA = U.S. Environmental Protection Agency

events/day = events per day

hr/d = hours per day

hr/event = hours per event

kg = kilograms

Table H.2-17. Default RME Construction Worker Exposure Parameters in the Virginia Unified Risk Assessment Model (VURAM)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Symbol	Description	Value	Units
ATcw	Construction Worker Averaging Time, Cancer: 365 x LT	25550	(days)
ATcw-a	Construction Worker Averaging Time, Non-Cancer: EWcw x 7 x EDcw	350	(days)
BWcw	Construction Worker Body Weight	80	(kg)
DWcw	Construction Worker Days Worked	5	(days/week)
EDcw	Construction Worker Exposure Duration	1	(yrs)
EFcw	Construction Worker Exposure Frequency	250	(days/yrs)
ETcw	Construction Worker Exposure Time	8	(hrs/day)
EWcw	Construction Worker Weeks Worked	50	(weeks/yr)
SAcw	Construction Worker Surface Area	3527	(cm^2/day)
Tc	Total time over which construction occurs: EDcw*EWcw*7days/wk*24hrs/day*3600s/hr	30240000	(s)
TR-ACH	Trench Air Changes per Hour	2	$(h)^{-1}$
TR-ACvad	Trench Advection Coefficient Groundwater greater than 15ft	0.25	(cm^3/cm^3)
TR-CF1	Trench Conversion Factor-1	1E-03	(L/cm^3)
TR-CF2	Trench Conversion Factor-2	1E+04	(cm^2/m^2)
TR-CF3	Trench Conversion Factor-3	3600	(s/hr)
TR-CF4	Trench Conversion Factor-4	1E+06	(cm^3/m^3)
TR-D-dir	Trench Depth - groundwater less Than 15ft	2.44	(m)
TR-D-ind	Trench Depth - groundwater greater than 15ft	4.57	(m)
TR-Dsg	Trench - Depth to soil gas vapor source	1	(cm)
TR-EFcw	Trench Construction Worker Exposure Frequency	125	(days/yr)
TR-ETcw	Trench Construction Worker Exposure Time	4	(hrs/day)
TR-EVcw	Trench Construction Worker Events	1	(events/day)
TR-F	Trench Fraction of floor through which contaminant can enter	1	(unitless)
TR-HV	Trench Thickness of Vadose Zone - groundwater greater than 15 ft	30	(cm)
TR-IRcw	Trench Construction Worker Groundwater Ingestion Rate	0.02	(L/day)
TR-KGH2O	Trench Gas-phase mass transfer coefficient of water vapor at 25deg C	0.833	(cm/s)
TR-KLO2	Trench Liquid-phase mass transfer coefficient of oxygen at 25deg C	0.002	(cm/s)
TR-L	Trench Length	2.44	(m)
TR-Lgw	Trench Depth to groundwater	488	(cm)
TR-MWH2O	Trench Molecular Weight of Water	18	(unitless)
TR-MWO2	Trench Molecular Weight of Oxygen	32	(unitless)
TR-Porvad	Trench Porosity in Vadose Zone - groundwater greater than 15ft	0.44	(cm^3/cm^3)
TR-R	Trench Ideal Gas Constant	0.000082	(atm-m^3/mol-K)
TR-Temp-F	Trench Temperature Fahrenheit	77	(F)
TR-Temp-K	Trench Temperature	298	(K)
TR-W	Trench Width	0.91	(m)
TR-W/D	Trench Width to Depth Ratio	0.38	(unitless)

Table H.3-1. Oral and Dermal Toxicity Values

700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

COPC	CASRN	Non-Cancer Toxicity Values						Cancer Toxicity Values					
		Oral RfD				Dermal RfD		Oral Slope Factor				Dermal Slope Factor	
		Oral RfD (mg/kg/d)	Composite UF	Target Organ	Source	Oral Absorption Efficiency for Dermal, ABS_{GI} [a]	Dermal RfD (mg/kg/d)	Oral SF $(mg/kg/d)^{-1}$		Weight of Evidence Classification	Source	Oral Absorption Efficiency for Dermal, ABS_{GI} [a]	Dermal SF $(mg/kg/d)^{-1}$
SVOCs													
1,4-DIOXANE	**123-91-1**	3.0E-02	300	Liver/ Nervous / Respiratory / Urinary	I	>50%	3.0E-02	1.0E-01		Likely carcinogenic	I	>50%	1.0E-01
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	2.0E-02	1000	Liver	I	>50%	2.0E-02	1.4E-02		B2	I	>50%	1.4E-02
VOCs													
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.0E-02	1000	Liver	I	>50%	2.0E-02	2.0E-01		Likely carcinogenic	I	>50%	2.0E-01
1,1,2-TRICHLOROETHANE	79-00-5	4.0E-03	1000	Immune / Hematologic	I	>50%	4.0E-03	5.7E-02		C	I	>50%	5.7E-02
1,2,4-TRICHLOROBENZENE	120-82-1	1.0E-02	1000	Endocrine	I	>50%	1.0E-02	2.9E-02		Likely carcinogenic	P	>50%	2.9E-02
1,2,4-TRIMETHYLBENZENE	95-63-6	1.0E-02	300	Nervous	I	>50%	1.0E-02	-		-		-	-
1,2-DIBROMOETHANE	106-93-4	9.0E-03	3000	Endocrine / Reproductive / Liver	I	>50%	9.0E-03	2.0E+00		Likely carcinogenic	I	>50%	2.0E+00
1,2-DICHLOROETHANE	107-06-2	6.0E-03	10000	Kidney	X	>50%	6.0E-03	9.1E-02		B2	I	>50%	9.1E-02
1,2-DICHLOROPROPANE	78-87-5	4.0E-02	30	Musculoskeletal	P	>50%	4.0E-02	3.7E-02		Likely carcinogenic	P	>50%	3.7E-02
1,3-BUTADIENE	106-99-0	-	-	-		>50%	-	6.0E-01		Carcinogenic	C	>50%	6.0E-01
1,3,5-Trimethylbenzene	108-67-8	1.0E-02	300	Nervous	I	>50%	1.0E-02	-		-		-	-
1,4-DICHLOROBENZENE	106-46-7	7.0E-02	100	Liver	A	>50%	7.0E-02	5.4E-03		Carcinogenic	C	>50%	5.4E-03
2-HEXANONE	591-78-6	5.0E-03	1000	Nervous	I	>50%	5.0E-03	-		-		-	-
BENZENE	71-43-2	4.0E-03	300	Immune	I	>50%	4.0E-03	5.5E-02		A	I	>50%	5.5E-02
BENZYL CHLORIDE	100-44-7	2.0E-03	3000	Cardiovascular	P	>50%	2.0E-03	1.7E-01		B2	I	>50%	1.7E-01
BROMODICHLOROMETHANE	75-27-4	8.0E-03	1000	Reproductive	P	>50%	8.0E-03	6.2E-02		B2	I	>50%	6.2E-02
BROMOMETHANE	74-83-9	1.4E-03	1000	Gastrointestinal	I	>50%	1.4E-03	-		-		-	-
CARBON TETRACHLORIDE	56-23-5	4.0E-03	1000	Liver	I	>50%	4.0E-03	7.0E-02		Likely carcinogenic	I	>50%	7.0E-02
CHLOROFORM	67-66-3	1.0E-02	100	Liver	I	>50%	1.0E-02	3.1E-02		B2	C	>50%	3.1E-02
CIS-1,2-DICHLOROETHENE	**156-59-2**	2.0E-03	3000	Urinary	I	>50%	2.0E-03	-		-		-	-
DIBROMOCHLOROMETHANE	124-48-1	2.0E-02	1000	Liver	I	>50%	2.0E-02	8.4E-02		C	I	>50%	8.4E-02
ETHYL ACETATE	141-78-6	7.0E-01	1000	Other (Behavioral, Respiratory)	P	>50%	7.0E-01	-		-		-	-
ETHYLBENZENE	100-41-4	5.0E-02	1000	Liver / Kidney	I [b]	>50%	5.0E-02	1.1E-02		Carinogenic	C	>50%	1.1E-02
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.0E-03	100	Urinary	P	>50%	1.0E-03	7.8E-02		C	I	>50%	7.8E-02
ISOPROPYL ALCOHOL	67-63-0	2.0E+00	30	Other (Decreased Fetal Body Weight)	P	>50%	2.0E+00	-		-		-	-
METHYLENE CHLORIDE	75-09-2	6.0E-03	30	Liver	I	>50%	6.0E-03	2.0E-03	M	Likely carcinogenic	I	>50%	2.0E-03
NAPHTHALENE	91-20-3	2.0E-02	3000	Other (Decreased Body Weight)	I [b]	89%	2.0E-02	1.2E-01		Likely carcinogenic	C	89%	1.2E-01
O-XYLENE	95-47-6	2.0E-01	1000	Other (Decreased Body Weight / Mortality)	G	>50%	2.0E-01	-		-		-	-
M,P-XYLENE	108-38-3	2.0E-01	1000	Other (Decreased Body Weight / Mortality)	G	>50%	2.0E-01	-		-		-	-
TETRACHLOROETHENE	**127-18-4**	6.0E-03	1000	Nervous / Occular	I	>50%	6.0E-03	2.1E-03		Likely carcinogenic	I	>50%	2.1E-03
TRICHLOROETHENE	**79-01-6**	5.0E-04	multiple	Heart/ Immune System/Developmental / Kidney	I	>50%	5.0E-04	4.6E-02	M	Carinogenic	I	>50%	4.6E-02
VINYL ACETATE	108-05-4	1.0E+00	100	Kidney / Other (Altered Body Weight)	H	>50%	1.0E+00	-		-		-	-
VINYL CHLORIDE	**75-01-4**	3.0E-03	30	Liver	I	>50%	3.0E-03	7.2E-01	M	A	I	>50%	7.2E-01

Notes:

[a] As provided in Exhibit 4-1 of USEPA RAGS Part E (Dermal)

[b] The IRIS (re)assessment for this chemical was suspended in Dec 2018, but may be restarted as EPA priorities change

Analytes represented in **bold** indicate the site specific COPCs.

-- = not in RSL table

M - This chemical operates with a mutagenic mode of action (USEPA 2005).

mg/kg-d - milligrams per kilogram per day

NA - not available

SVOCs - semivolatile organic compounds

VOCs - volatile organic compounds

SF - slope factor

RfD - reference dose

UF - uncertainty factor

Sources:

A - Agency for Toxic Substatnces and Disease Registry

C - California Environmental Protection Agency

G - Toxicity values for mixture of three xylene compounds. Value used as a surrogate for individual congeners.

H - Health Effects Assessment Summary Table

I - Integrated Risk Information System

P - Provisional Peer-Reviewed Toxicity Values

X - Provisional Peer-Reviewed Toxicity Value Screening Levels

WOE Description:

A - Human Carcinogen

B2 - Probable Human Carcinogen

C - Possible Human Carcinogen

D - Not a Human Carcinogen

Table H.3-2. Inhalation Toxicity Values

700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

COPC	CASRN	Volatile?	Non-Cancer Toxicity Values				Cancer Toxicity Values			
			Inhalation RfC				Inhalation IUR			
			Inhalation RfC (mg/m^3)	Composite UF	Target Organ	Source	IUR $(\mu g/m^3)^{-1}$		Source	WOE Desc.
SVOCs										
1,4-DIOXANE	**123-91-1**	V	3.0E-02	1000	Nervous / Respiratory	I	5.0E-06		I	Likely Carcinogenic
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7		-	--	--		2.4E-06		C	Not Evaluated
VOCs										
1,1,2,2-TETRACHLOROETHANE	79-34-5	V	-	--	--		5.8E-05		C	Carc. to humans
1,1,2-TRICHLOROETHANE	79-00-5	V	2.0E-04	300	Respiratory	X	1.6E-05		I	C
1,2,4-TRICHLOROBENZENE	120-82-1	V	2.0E-03	3000	Urinary	P	-			-
1,2,4-TRIMETHYLBENZENE	95-63-6	V	6.0E-02	300	Nervous	I	-			-
1,2-DIBROMOETHANE	106-93-4	V	9.0E-03	300	Respiratory	I	6.0E-04		I	Likely Carcinogenic
1,2-DICHLOROETHANE	107-06-2	V	7.0E-03	3000	Nervous	P	2.6E-05		I	B2
1,2-DICHLOROPROPANE	78-87-5	V	4.0E-03	300	Respiratory	I	3.7E-06		P	Likely Carcinogenic
1,3-BUTADIENE	106-99-0	V	2.0E-03	1000	Reproductive	I	3.0E-05		I	Carc. to humans
1,3,5-Trimethylbenzene	108-67-8	V	6.0E-02	300	Nervous	I	-			-
1,4-DICHLOROBENZENE	106-46-7	V	8.0E-01	100	Liver	I	1.1E-05		C	Not Evaluated
2-HEXANONE	591-78-6	V	3.0E-02	3000	Nervous	I	-			-
BENZENE	71-43-2	V	3.0E-02	300	Immune	I	7.8E-06		I	A
BENZYL CHLORIDE	100-44-7	V	1.0E-03	1000	Respiratory	P	4.9E-05		C	Carc. to humans
BROMODICHLOROMETHANE	75-27-4	V	-	-	-		3.7E-05		C	B2
BROMOMETHANE	74-83-9	V	5.0E-03	100	Nervous / Respiratory	I	-			-
CARBON TETRACHLORIDE	56-23-5	V	1.0E-01	100	Liver	I	6.0E-06		I	Likely Carcinogenic
CHLOROFORM	67-66-3	V	9.8E-02	100	Nervous / Liver / Kidney	A	2.3E-05		I	B2
CIS-1,2-DICHLOROETHENE	**156-59-2**	V	-	-	-		-			-
DIBROMOCHLOROMETHANE	124-48-1	V	-	-	-		-			-
ETHYL ACETATE	141-78-6	V	7.0E-02	3000	Whole Body Effects (Weight Changes, Behavioral Response)	P	-			-
ETHYLBENZENE	100-41-4	V	1.0E+00	300	Developmental	I	2.5E-06		C	Carc. to humans
HEXACHLORO-1,3-BUTADIENE	87-68-3	V	-	-	-		2.2E-05		I	C
ISOPROPYL ALCOHOL	67-63-0	V	2.0E-01	1000	Other (Decreased absolute and relative testes weight)	P	-			-
METHYLENE CHLORIDE	75-09-2	V	6.0E-01	30	Liver	I	1.0E-08	M	I	Likely Carcinogenic
NAPHTHALENE	91-20-3	V	3.0E-03	3000	Respiratory / Olfactory	I	3.4E-05		C	Carc. to humans
O-XYLENE	95-47-6	V	1.0E-01	300	Nervous	G	-			-
M,P-XYLENE	108-38-3	V	1.0E-01	300	Nervous	G	-			-
TETRACHLOROETHENE	**127-18-4**	V	4.0E-02	1000	Nervous / Occular	I	2.6E-07		I	Likely Carcinogenic
TRICHLOROETHENE	**79-01-6**	V	2.0E-03	multiple	Heart / Immune System	I	4.1E-06	M	I	Carc. to humans
VINYL ACETATE	108-05-4	V	2.0E-01	30	Nervous / Respiratory	I	-			-
VINYL CHLORIDE	**75-01-4**	V	8.0E-02	30	Liver	A	4.4E-06	M	I	A

Notes:
-- = not in RSL table
M - This chemical operates with a mutagenic mode of action (USEPA 2005).
mg/kg-d - milligrams per kilogram per day
SV - semivolatile
V - volatile
VF - volatilization factor
mg/m^3 - milligrams per cubic meter
ug/m^3 - micrograms per cubic meter
IUR - inhalation unit risk
WOE - weight of evidence
RfC - reference concentration
UF - uncertainty factor

Sources:
A - Agency for Toxic Substatnces and Disease Registry
C - California Environmental Protection Agency
G - Toxicity values for mixture of three xylene compounds.
Value used as a surrogate for individual congeners.
I - Integrated Risk Information System
P - Provisional Peer-Reviewed Toxicity Values
X - Provisional Peer-Reviewed Toxicity Values Screening Level

WOE Description:
A - Human Carcinogen
B2 - Probable Human Carcinogen
C - Possible Human Carcinogen
D - Not a Human Carcinogen
IN - inadequate information to assess carcinogenic potential

Table H.4-1. Number of Indoor and Outdoor Air Samples Collected by Property
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Property ID	Sampling Date	Number of Air Samples by Sampling Method				
		Indoor Air			Outdoor Air	
		HAPSITE	SUMMA	PASSIVE	HAPSITE	SUMMA
Residential Properties						
0001-H	Jan-2015	30			1	
	Mar-2017	9	1		2	
0002-H	Feb-2015	25			1	
	Mar-2017	5	1		1	
0003-H	Jan-2015	25			1	
	Apr-2015		3			
	Mar-2016		1			
	Dec-2019	4	4			1
	Jan-2020			4		
	Aug-2021		1			
0004-H	Jan-2015	26			2	
	Mar-2017	2	1		1	
0005-H	Apr-2015	24			1	
0006-H	Mar-2015	22			1	
0007-H	Jan-2015	29				
0008-H	Feb-2015	17			1	
	Apr-2015		1			
0009-H	Feb-2015	29			1	
0010-H	Jan-2015	27			1	
0011-H	Feb-2015	24			1	
	Mar-2016		1			
	Jan-2020	6	4	4		1
	Aug-2021		1			1
0012-H	Feb-2015	26			1	
	Mar-2017	6	1		1	
0013-H	Jan-2015	28			2	
	Mar-2017	3	1		1	
	Mar-2022		1			
0014-H	Mar-2015	28			1	
0015-H	Mar-2015	24			1	
0016-H	Jan-2015	20			2	
0017-H	Jan-2015	31			2	
	Mar-2016		1			
0018-H	Feb-2015	30			1	
	Mar-2016		1			
	Dec-2019	5				
	Jan-2020		5	5		
	Aug-2021		1			
0023-H	Mar-2015	31			1	
	Mar-2016		1			
0024-H	Feb-2015	38			1	
0025-H	Feb-2015	27			1	
	Mar-2017	2	1		1	
	Mar-2020	4	3	3		
0026-H	Mar-2015	26			1	
	Apr-2015		1			2
	Mar-2017	6	1		1	
	Mar-2020	4	4	4		1
	Aug-2021		1			

Table H.4-1. Number of Indoor and Outdoor Air Samples Collected by Property
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Property ID	Sampling Date	Number of Air Samples by Sampling Method				
		Indoor Air			Outdoor Air	
		HAPSITE	SUMMA	PASSIVE	HAPSITE	SUMMA
0027-H	Feb-2015	32			1	
	Mar-2017	3	1		1	
0029-H	Mar-2015	21			1	
	Mar-2017	3	1		1	
	Mar-2022		1		1	
0030-H	Mar-2015	25			1	
	Apr-2015		1			2
0032-H	Mar-2015	23			1	
0033-H	Apr-2015	25			1	
0036-H	Apr-2015	20			1	
	Apr-2015		1			
0037-H	Apr-2015	33			1	
	Mar-2016		1			
	Dec-2019	4				
	Jan-2020		4	4		1
	Aug-2021		1			
0038-H	Apr-2015	24			1	
	Apr-2017	2	1			
0040-H	Mar-2016	32	2		2	
	Apr-2018		6			
	Jul-2018		6			
	Oct-2018		6			
	Jan-2019		6			
	Mar-2022		2			
0041-H	Mar-2016	30			1	
	Mar-2022		1			
0047-H	Feb-2016	31			1	
0050-H	Mar-2016	14			1	
0051-H	Feb-2016	24			2^	
	Mar-2016		1			
	Dec-2019	1				
	Mar-2020	5	3	3		1
	Aug-2021		1			1
0052-H	Mar-2016	25			1	
0053-H	May-2016	32	1		1	
	Dec-2019	3				
	Jan-2020		4	4		
0054-H	May-2016	17			2**	
	Jun-2016	40				
0055-H	May-2016	22			1	
0056-H	May-2016	25			1	
0057-H	Apr-2017	20				
0058-H	Mar-2017	20			1	
0059-H	Mar-2017	22			1	
	Jan-2020	5	5	5		1
	Aug-2021		1			
0060-H	Mar-2017	31			1	
0061-H	Mar-2017	22			1	
0062-H	Mar-2017	17			1	
	Mar-2022		1			
0063-H	Mar-2017	30			1	
0064-H	Apr-2017	1	1			
	Mar-2022		1			1

Table H.4-1. Number of Indoor and Outdoor Air Samples Collected by Property
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Property ID	Sampling Date	Number of Air Samples by Sampling Method				
		Indoor Air			Outdoor Air	
		HAPSITE	SUMMA	PASSIVE	HAPSITE	SUMMA
0065-H	Dec-2019	4				
	Jan-2020		4	4		1
0066-H	Mar-2020	4	4	4		1
0069-H	Mar-2020	5	5	5		
0071-H	Mar-2020	3	3	3		1
0072-H	Mar-2022		1			
0076-H	Mar-2020	5	3	3		1
0091-H	Mar-2020	5	4	4		1
	Aug-2021		1			1
0098-H	Mar-2020	5	4	4		1
0102-H	Aug-2021		1			1
0118-H	Mar-2020	4	3	3		1
0121-H	Mar-2020	4	4	4		1
0122-H	Mar-2020	5	5	5		1
0133-H	Mar-2020	4	3	3		
0135-H	Mar-2020	3	3	3		1
0137-H	Mar-2020	5	2	2		
0139-H	Mar-2020	3	3	3		1
0145-H	Mar-2022		1			
0146-H	Mar-2020	3	3	3		1
	Mar-2022		1			1
0148-H	Mar-2020	4	3	3		1
0153-H	Mar-2020	3	3	3		1
0162-H	Mar-2020	3	3	3		1
0166-H	Mar-2020	3	2	2		
	Aug-2021		1			
0172-H	Mar-2022		1			
0173-H	Mar-2020	2	2	2		1
0174-H	Mar-2020	3	3	3		1
0180-H	Mar-2022		1			
0189-H	Mar-2022		1			
0192-H	Mar-2022		1			
0193-H	Mar-2022		1			
0194-H	Mar-2022		1			
0195-H	Mar-2022		1			
0197-H	Mar-2022		1			
	Apr-2022		4			
0225-H	Mar-2022		1			
0230-H	Mar-2022		1			
0255-H	Mar-2022		1			
0256-H	Mar-2022		1			
0263-H	Mar-2022		1			
0273-H	Mar-2022		1			
0274-H	Mar-2022		1			
0277-H	Mar-2022		1			
0302-H	Mar-2022		1			1
0315-H	Mar-2022		1			
0329-H	Mar-2022		1			
0334-H	Mar-2022		1			1
0336-H	Mar-2022		1			
0347-H	Mar-2022		1			
0381-H	Mar-2022		1			1
0392-H	Mar-2022		1			

Table H.4-1. Number of Indoor and Outdoor Air Samples Collected by Property
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Property ID	Sampling Date	Number of Air Samples by Sampling Method				
		Indoor Air			Outdoor Air	
		HAPSITE	SUMMA	PASSIVE	HAPSITE	SUMMA
0395-H	Mar-2022		1			
Other Buildings						
0019-B	Feb-2015	38			1	
Churches						
0020-C	Feb-2015	23			1	
0366-C	Mar-2022		3			
Schools						
0021-S	Feb-2015	30			2	
0022-S	Apr-2015	33			1	
0028-S	Mar-2015	27			1	
	Apr-2015	16				
0031-S	2012		*			
0045-S	Mar-2016	98			4	
	Dec-2019	25				
0365-S	Mar-2022		3			1
VAMC Campus Buildings						
Building 6	Jan-2019	35			4	
	Sept-2019		9			1
	Mar-2021		2			1
Building 7	Jan-2019	16				
	Sept-2019		7			1
	Mar-2021		2			
Building 13 (Daycare)	Feb-2019	7				
Building 20 (Valor House)	Feb-2019	13				
	Mar-2022		2			
Building 32 (Fisher House)	Mar-2022		1			1

*Indoor air data collected by an independent contractor, data not used in the risk assessment.
**One sample in collected in May and one sample collected in June
^Tier 1 RAL exceedance for the one outdoor air sample collected above the spring

blue	One or more samples in exceedance of the Residential PCE or TCE RBSL
red	One or more samples in exceedance of the Residential PCE or TCE Tier 1 RAL
	Collected HAPSITE data not suitable for risk assessment

PCE = Tetrachloroethene
RAL = removal action level (as established in CH2M Hill 2015)
RBSL = risk-based screening level (as established in CH2M Hill 2015)
TCE = Trichloroethene
VAMC = Veterans Affairs Medical Center

Table H.4-2
Screening-Level Evaluation for Construction Worker Exposures to Shallow Groundwater
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Groundwater VOC COPC	CASRN	Summary Statistics for Groundwater [a]				Non-Cancer Hazard				Cancer Risk			
		No. Samples	No. Detects	Detection Frequency	Maximum Conc. (µg/L)	Ingestion	Dermal	Inhalation	Total	Ingestion	Dermal	Inhalation	Total
1,4-DIOXANE	123-91-1	36	1	3%	2.1	4E-07	1E-07	1E-04	1E-04	3E-10	7E-11	6E-09	6E-09
2-HEXANONE	591-78-6	73	0	0%	<20	4E-04	1E-03	2E-01	2E-01	---	---	---	---
BENZENE	71-43-2	73	4	5%	1.0	9E-06	1E-04	7E-03	7E-03	7E-11	8E-10	6E-08	6E-08
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	30	2	7%	130	1E-04	4E-01	---	4E-01	2E-09	8E-06	---	**8E-06**
BROMODICHLOROMETHANE	75-27-4	73	15	21%	1.4	2E-05	6E-05	---	8E-05	1E-10	4E-10	3E-07	3E-07
CHLOROFORM	67-66-3	73	59	81%	6.6	6E-06	3E-05	1E-02	1E-02	3E-10	1E-09	9E-07	9E-07
CIS-1,2-DICHLOROETHENE	156-59-2	73	37	51%	3.9	2E-05	2E-04	---	2E-04	---	---	---	---
DIBROMOCHLOROMETHANE	124-48-1	73	1	1%	1.0	1E-06	5E-06	---	6E-06	1E-10	4E-10	---	5E-10
ETHYLBENZENE	100-41-4	73	3	4%	1.0	2E-06	7E-05	5E-05	1E-04	1E-11	5E-10	2E-08	2E-08
TETRACHLOROETHENE	127-18-4	73	67	92%	60	7E-04	2E-02	6E-01	6E-01	2E-10	5E-09	8E-08	9E-08
TRICHLOROETHENE	79-01-6	73	50	68%	12	2E-03	2E-02	**2E+00**	**2E+00**	7E-10	7E-09	3E-07	3E-07
See **Attachment H.3-1** for detailed VURAM output								**Total Hazard:**	**4E+00**			**Cumulative Risk:**	**1E-05**

[a] Only includes groundwater samples with a starting depth of 10 feet or less.
Bold text indicates a non-cancer hazard greater than 1 or cancer risk greater than 1E-06.

COPC = chemical of potential concern
µg/L = micrograms per liter
VOC = volatile organic compound
VURAM = Virginia Unified Risk Assessment Model

Table H.4-3
Location-Specific Evaluation for Construction Worker Exposures to PCE and TCE in Shallow Groundwater
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Location ID	No. Samples [a]	TETRACHLOROETHENE		TRICHLOROETHENE		Non-cancer HI	Cancer Risk
		Shallow GW EPC (µg/L)	EPC Basis	Shallow GW EPC (µg/L)	EPC Basis		
GW-001	2	0.78	Maximum	<0.5	All ND; MDL	1E-01	1E-08
GW-005	1	1.4	Maximum	<0.5	All ND; MDL	1E-01	1E-08
GW-006	1	3.1	Maximum	1	Maximum	2E-01	3E-08
GW-007	1	33	Maximum	0.59	Maximum	4E-01	6E-08
GW-008	1	9.6	Maximum	1.8	Maximum	5E-01	6E-08
GW-009	1	0.7	Maximum	2.4	Maximum	5E-01	6E-08
GW-011	3	45	Maximum	0.82	Maximum	6E-01	9E-08
GW-012	1	4.8	Maximum	0.22	Maximum	9E-02	1E-08
GW-015	2	31	Maximum	0.63	Maximum	4E-01	6E-08
GW-016	3	20	Maximum	0.73	Maximum	3E-01	5E-08
GW-017	1	1.1	Maximum	0.56	Maximum	1E-01	2E-08
GW-018	1	10	Maximum	2.1	Maximum	5E-01	7E-08
GW-022	1	<0.5	All ND; MDL	<0.5	All ND; MDL	1E-01	1E-08
GW-023	1	<0.5	All ND; MDL	<0.5	All ND; MDL	1E-01	1E-08
GW-049	4	1.2	Maximum	<0.5	All ND; MDL	1E-01	1E-08
GW-050	3	3	Maximum	6.4	Maximum	1E+00	2E-07
GW-051	1	23	Maximum	0.19	Maximum	3E-01	4E-08
GW-053	3	45	Maximum	0.84	Maximum	6E-01	9E-08
GW-055	1	0.19	Maximum	<0.5	All ND; MDL	1E-01	1E-08
GW-059	3	2	Maximum	7.7	Maximum	2E+00	2E-07
GW-060	1	10	Maximum	1	Maximum	3E-01	4E-08
Mt. Olivet	1	40	Maximum	0.56	Maximum	5E-01	7E-08
MW-14S	8	7.5	95% KM (t) UCL	7.5	95% Student's-t UCL	2E+00	2E-07
MW-16S	8	26	95% Student's-t UCL	0.21	95% Student's-t UCL	3E-01	4E-08
MW-17S	8	0.819	95% Student's-t UCL	<1	All ND; MDL	2E-01	3E-08
RG-01	1	7.3	Maximum	0.17	Maximum	1E-01	1E-08
RG-02	1	57	Maximum	1.3	Maximum	8E-01	1E-07
RG-03	1	60	Maximum	0.67	Maximum	7E-01	1E-07
RG-04	1	6	Maximum	0.99	Maximum	3E-01	3E-08
RG-06	1	1.5	Maximum	7.4	Maximum	2E+00	2E-07
RG-08	2	58	Maximum	0.43	Maximum	7E-01	9E-08
RG-09	1	13	Maximum	1.2	Maximum	4E-01	5E-08
SLC-18	1	<0.5	All ND; MDL	<0.5	All ND; MDL	1E-01	1E-08
UU-1	3	<0.5	All ND; MDL	<0.5	All ND; MDL	1E-01	1E-08

[a] Only includes groundwater samples with a starting depth of 10 feet or less.

Non-cancer HI is greater than 1

All ND = all samples were non-detect
EPC = exposure point concentration
GW = groundwater
MDL = method detection limit
PCE = tetrachloroethene
TCE = trichloroethene
TCR = target cancer risk
THQ = target hazard quotient
UCL = upper confidence limit
µg/L = micrograms per liter

Table H.4-4
Screening-Level Evaluation of Construction Worker Exposures to Trench Air Impacted by Soil Gas
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Soil Gas VOC COPC	CASRN	Summary Statistics for Soil Gas [a]				Non-Cancer Hazard from Inhalation	Cancer Risk from Inhalation
		No. Samples	No. Detects	Detection Frequency	Maximum Conc. (µg/m^3)		
1,3-BUTADIENE	106-99-0	83	8	10%	32 [b]	2E-02	2E-08
BENZENE	71-43-2	83	54	65%	28 [b]	4E-04	3E-09
BROMODICHLOROMETHANE	75-27-4	83	12	14%	38	1E-03	1E-08
CHLOROFORM	67-66-3	83	65	78%	480	2E-03	1E-07
ETHYL ACETATE	141-78-6	42	20	48%	280	4E-04	---
TETRACHLOROETHENE	127-18-4	350	260	74%	46,000 [b]	7E-01	1E-07
TRICHLOROETHENE	79-01-6	351	78	22%	180 [b]	7E-02	8E-09
See **Attachment H.4** for detailed VURAM output					**Total:**	8E-01	3E-07

[a] Restricted to soil gas samples collected at depths less than 10 feet.
[b] Maximum concentration detected at a subslab sample point at Building 6 on the VAMC campus. It is anticipated that accumulation under the slab may occur to a greater degree than in undeveloped areas. While intrusive work beneath the buildings is unlikely, particularly at the default exposure frequencies adopted for a construction worker scenario (e.g., 250 days), the results shown above indicate that exposure originating from soil gas during intrusive works is unlikely to result in unacceptable risk.

COPC = chemical of potential concern
µg/m^3 = micrograms per cubic meter
VOC = volatile organic compound
VURAM = Virginia Unified Risk Assessment Model
--- = not carcinogenic; no cancer risk calculated

Table H.4-5. Risk Summary for Hypothetical Future Residential Exposures to Groundwater
Based on Maximum Concentrations

700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Well	Risk Grouping [a]	Reasonable Maximum Exposure (RME)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	HI_{adult}	$Risk_{lifetime}$		
Residential	**MW-01D**	Based on Detects only	3E-01	2E-01	4E-06		Ingestion: BIS(2-ETHYLHEXYL)PHTHALATE
		Site-related only	4E-01	3E-01	1E-05		none [c]
Residential	**MW-03RB**	Based on Detects only	6E+00	5E+00	5E-05	Ingestion, Dermal, and Inhalation: **PCE**	Ingestion: CHLOROFORM; **PCE; TCE** Dermal: **PCE** Inhalation: BROMODICHLOROMETHANE; CHLOROFORM; **PCE; TCE**
		Site-related only	6E+00	5E+00	3E-05		
Residential	**MW-03RC**	Based on Detects only	2E-01	1E-01	9E-06		Inhalation: CHLOROFORM
		Site-related only	4E-01	3E-01	2E-06		none
Residential	**MW-03RD**	Based on Detects only	8E-03	6E-03	1E-06		
		Site-related only	2E-01	2E-01	2E-06		none
Residential	**MW-08C**	Based on Detects only	6E-03	5E-03	1E-06		
		Site-related only	2E-01	2E-01	2E-06		none
Residential	**MW-13L**	Based on Detects only	1E+00	1E+00	2E-05		Inhalation: CHLOROFORM; **PCE**
		Site-related only	1E+00	1E+00	6E-06		
Residential	**MW-34C**	Based on Detects only	All ND	All ND	All ND		
		Site-related only	2E-01	2E-01	1E-06		none
Residential	**MW-34D**	Based on Detects only	All ND	All ND	All ND		
		Site-related only	2E-01	2E-01	2E-06		none

Cancer risk is within the USEPA acceptable risk range between 1E-06 and 1E-04
Non-cancer HI is greater than 1 or cancer risk is greater than 1E-04

Notes:

[a] Risk is presented based on detects only (i.e., includes only the detected COPCs) and for site-related COPCs only. The site-related COPCs include PCE, TCE, cis-1,2-DCE, vinyl chloride, and 1,4-dioxane. Risk for site-related COPCs includes both detects and non-detects.

[b] Chemicals are identified as drivers if the individual chemical-specific HQ is greater than 1 or risk is greater than 1E-06. The list of risk drivers is limited to only those chemicals that were detected in groundwater. Site-related risk drivers are shown in **bold**.

[c] 1,4-dioxane was not detected in groundwater, but the achieved detection limits were not adequate relative to a cancer risk threshold of 1E-06.

All ND = all COPCs were non-detect in all samples
cis-1,2-DCE = cis-1,2-Dichloroethene
COPC = chemicals of potential concern
HI = hazard index
HQ = hazard quotient
none = no individual chemicals had an non-cancer HQ greater than 1 or cancer risk greater than 1E-06
PCE = Tetrachloroethene
TCE = Trichloroethene

Table H.4-6. Risk Summary for Residential Exposures to Indoor Air
Based on Measured Indoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	HI_{adult}	$Risk_{lifetime}$		
Residential Properties							
Residential	**0001-H**	Based on Detects only	8E-01	8E-01	3E-05		1,2-DICHLOROETHANE; BENZENE; CARBON TETRACHLORIDE; CHLOROFORM; ETHYLBENZENE
		Site-related only	2E-01	2E-01	2E-06		
Residential	**0002-H**	Based on Detects only	5E-01	5E-01	1E-05		BENZENE; CHLOROFORM
		Site-related only	2E-01	2E-01	1E-06		
Residential	**0003-H**	Based on Detects only	4E+00	4E+00	5E-04	none	1,1,2,2-TETRACHLOROETHANE; 1,3-BUTADIENE; 1,2-DICHLOROETHANE; BENZENE; CHLOROFORM; ETHYLBENZENE; **PCE**
		Site-related only	4E-01	4E-01	3E-06		
Residential	**0004-H**	Based on Detects only	6E-02	6E-02	9E-06		BENZENE; CHLOROFORM
		Site-related only	1E-01	1E-01	1E-06		
Residential	**0008-H**	Based on Detects only	3E+00	3E+00	1E-04	BENZENE; M,P-XYLENE	BENZENE; ETHYLBENZENE
		Site-related only	3E-01	3E-01	2E-06		
Residential	**0011-H**	Based on Detects only	7E-01	7E-01	1E-05		BENZENE; CHLOROFORM; **PCE**
		Site-related only	5E-01	5E-01	2E-06		
Residential	**0012-H**	Based on Detects only	2E-01	2E-01	2E-05		BENZENE; CHLOROFORM
		Site-related only	2E-01	2E-01	1E-06		
Residential	**0013-H**	Based on Detects only	2E-01	2E-01	7E-06		BENZENE; CHLOROFORM
		Site-related only	1E-01	1E-01	1E-06		
Residential	**0017-H**	Based on Detects only	6E-01	6E-01	2E-05		BENZENE; CHLOROFORM
		Site-related only	4E-01	4E-01	2E-06		
Residential	**0018-H**	Based on Detects only	8E+00	8E+00	2E-04	1,2,4-TRICHLOROBENZENE; BENZYL CHLORIDE; NAPHTHALENE	1,1,2,2-TETRACHLOROETHANE; 1,3-BUTADIENE; 1,2-DIBROMOETHANE; 1,2-DICHLOROETHANE; 1,4-DICHLOROBENZENE; BENZENE; BENZYL CHLORIDE; BROMODICHLOROMETHANE; CHLOROFORM; ETHYLBENZENE; HEXACHLORO-1,3-BUTADIENE; NAPHTHALENE; **TCE**
		Site-related only	7E-01	7E-01	4E-06		
Residential	**0023-H**	Based on Detects only	1E-01	1E-01	4E-06		BENZENE
		Site-related only	1E-01	1E-01	9E-07		
Residential	**0025-H**	Based on Detects only	3E-01	3E-01	4E-05		**1,4-DIOXANE**; 1,2-DICHLOROETHANE; 1,4-DICHLOROBENZENE; BENZENE; CHLOROFORM
		Site-related only	2E-01	2E-01	5E-06		
Residential	**0026-H**	Based on Detects only	5E+00	5E+00	7E-05	1,1,2-TRICHLOROETHANE	1,1,2-TRICHLOROETHANE; 1,2-DICHLOROETHANE; BENZENE; BROMODICHLOROMETHANE; CHLOROFORM; ETHYLBENZENE
		Site-related only	4E-01	4E-01	2E-06		
Residential	**0027-H**	Based on Detects only	5E-01	5E-01	4E-05		1,2-DICHLOROETHANE; 1,4-DICHLOROBENZENE; BENZENE
		Site-related only	1E-01	1E-01	1E-06		
Residential	**0029-H**	Based on Detects only	4E-01	4E-01	1E-05		BENZENE; CHLOROFORM
		Site-related only	2E-01	2E-01	1E-06		
Residential	**0030-H**	Based on Detects only	5E-01	5E-01	1E-05		1,2-DICHLOROETHANE; BENZENE
		Site-related only	3E-01	3E-01	2E-06		
Residential	**0036-H**	Based on Detects only	2E-01	2E-01	1E-05		BENZENE; CHLOROFORM
		Site-related only	3E-01	3E-01	2E-06		
Residential	**0037-H**	Based on Detects only	2E+00	2E+00	1E-04	1,2-DICHLOROETHANE	1,1,2,2-TETRACHLOROETHANE; 1,3-BUTADIENE; **1,4-DIOXANE**; 1,2-DICHLOROETHANE; BENZENE; BROMODICHLOROMETHANE; CHLOROFORM; ETHYLBENZENE
		Site-related only	3E-01	3E-01	4E-06		
Residential	**0038-H**	Based on Detects only	5E-02	5E-02	1E-05		CHLOROFORM
		Site-related only	1E-01	1E-01	1E-06		
Residential	**0040-H [c]**	Based on Detects only	1E+01	1E+01	1E-04	METHYLENE CHLORIDE; **PCE; TCE**	1,3-BUTADIENE; BENZENE; CHLOROFORM; ETHYLBENZENE; METHYLENE CHLORIDE; **PCE; TCE**
		Site-related only	1E+01	1E+01	4E-05		
Residential	**0041-H**	Based on Detects only	3E-01	3E-01	1E-05		1,2-DICHLOROETHANE; CHLOROFORM
		Site-related only	2E-01	2E-01	1E-06		
Residential	**0047-H**	Based on Detects only	2E-01	2E-01	8E-07		
		Site-related only	3E-01	3E-01	1E-06		
Residential	**0050-H**	Based on Detects only	All ND	All ND	All ND		
		Site-related only	1E-01	1E-01	6E-07		
Residential	**0051-H [d]**	Based on Detects only	1E+01	1E+01	7E-05	ISOPROPYL ALCOHOL; **PCE**	BENZENE; BROMODICHLOROMETHANE; CHLOROFORM; **PCE**
		Site-related only	1E+01	1E+01	4E-05		

Table H.4-6. Risk Summary for Residential Exposures to Indoor Air
Based on Measured Indoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	HI_{adult}	$Risk_{lifetime}$		
Residential	**0052-H**	Based on Detects only	5E-02	5E-02	2E-07		
		Site-related only	2E-01	2E-01	7E-07		
Residential	**0053-H**	Based on Detects only	1E+00	1E+00	2E-05		1,3-BUTADIENE; BENZENE; CHLOROFORM; ETHYLBENZENE; **PCE**
		Site-related only	8E-01	8E-01	4E-06		
Residential	**0054-H [e]**	Based on Detects only	5E+00	5E+00	2E-05	**TCE**	**PCE; TCE**
		Site-related only	5E+00	5E+00	2E-05		
Residential	**0055-H**	Based on Detects only	4E-02	4E-02	1E-07		
		Site-related only	2E-01	2E-01	7E-07		
Residential	**0056-H**	Based on Detects only	2E-01	2E-01	6E-07		
		Site-related only	3E-01	3E-01	1E-06		
Residential	**0057-H**	Based on Detects only	All ND	All ND	All ND		
		Site-related only	1E-01	1E-01	6E-07		
Residential	**0058-H**	Based on Detects only	All ND	All ND	All ND		
		Site-related only	1E-01	1E-01	6E-07		
Residential	**0059-H [f]**	Based on Detects only	1E+01	1E+01	1E-04	1,2,4-TRICHLOROBENZENE; **PCE; TCE**	1,3-BUTADIENE; **1,4-DIOXANE**; BENZENE; BROMODICHLOROMETHANE; CARBON TETRACHLORIDE; CHLOROFORM; HEXACHLORO-1,3-BUTADIENE; **PCE; TCE**
		Site-related only	1E+01	1E+01	5E-05		
Residential	**0060-H**	Based on Detects only	All ND	All ND	All ND		
		Site-related only	1E-01	1E-01	6E-07		
Residential	**0061-H**	Based on Detects only	All ND	All ND	All ND		
		Site-related only	1E-01	1E-01	6E-07		
Residential	**0062-H**	Based on Detects only	2E-01	2E-01	8E-06		1,2-DICHLOROETHANE; BENZENE; CHLOROFORM
		Site-related only	1E-01	1E-01	7E-07		
Residential	**0063-H**	Based on Detects only	1E-01	1E-01	4E-07		
		Site-related only	2E-01	2E-01	9E-07		
Residential	**0064-H**	Based on Detects only	6E-01	6E-01	1E-05		BENZENE; CHLOROFORM; ETHYLBENZENE
		Site-related only	4E-01	4E-01	3E-06		
Residential	**0065-H**	Based on Detects only	2E-01	2E-01	1E-05		BENZENE; CHLOROFORM
		Site-related only	5E-02	5E-02	7E-07		
Residential	**0066-H**	Based on Detects only	4E-01	4E-01	1E-05		1,2-DICHLOROETHANE; BENZENE; CHLOROFORM
		Site-related only	1E-01	1E-01	1E-06		
Residential	**0069-H**	Based on Detects only	4E-01	4E-01	2E-05		1,2-DICHLOROETHANE; BENZENE; CHLOROFORM
		Site-related only	8E-02	8E-02	9E-07		
Residential	**0071-H**	Based on Detects only	5E-01	5E-01	2E-05		1,2-DICHLOROETHANE; BENZENE; CHLOROFORM
		Site-related only	3E-02	3E-02	3E-07		
Residential	**0072-H**	Based on Detects only	2E-01	2E-01	6E-06		CHLOROFORM
		Site-related only	2E-02	2E-02	3E-07		
Residential	**0076-H**	Based on Detects only	4E-01	4E-01	2E-05		BENZENE; CHLOROFORM; ETHYLBENZENE
		Site-related only	3E-02	3E-02	6E-07		
Residential	**0091-H**	Based on Detects only	1E+00	1E+00	5E-05		1,2-DICHLOROETHANE; BENZENE; BROMODICHLOROMETHANE; CARBON TETRACHLORIDE; CHLOROFORM; **PCE**
		Site-related only	6E-01	6E-01	3E-06		
Residential	**0098-H**	Based on Detects only	8E-01	8E-01	3E-05		1,4-DICHLOROBENZENE; BENZENE; CHLOROFORM; ETHYLBENZENE; TCE
		Site-related only	4E-01	4E-01	2E-06		
Residential	**0102-H**	Based on Detects only	1E+00	1E+00	4E-05		1,2-DICHLOROETHANE; BENZENE; BROMODICHLOROMETHANE; CARBON TETRACHLORIDE; CHLOROFORM; ETHYLBENZENE
		Site-related only	3E-02	3E-02	8E-07		
Residential	**0118-H**	Based on Detects only	1E+00	1E+00	3E-05		BENZENE; CHLOROFORM; METHYLENE CHLORIDE
		Site-related only	1E-01	1E-01	9E-07		
Residential	**0121-H**	Based on Detects only	6E-01	6E-01	2E-05		BENZENE; BROMODICHLOROMETHANE; CHLOROFORM; NAPHTHALENE
		Site-related only	1E-01	1E-01	1E-06		
Residential	**0122-H**	Based on Detects only	5E-01	5E-01	1E-05		1,3-BUTADIENE; BENZENE; CHLOROFORM
		Site-related only	1E-01	1E-01	8E-07		
Residential	**0133-H**	Based on Detects only	4E-01	4E-01	6E-05		1,2-DICHLOROETHANE; BENZENE; BROMODICHLOROMETHANE; CHLOROFORM
		Site-related only	3E-02	3E-02	4E-07		
Residential	**0135-H**	Based on Detects only	1E+00	1E+00	3E-05		BENZENE; CHLOROFORM; ETHYLBENZENE; NAPHTHALENE
		Site-related only	4E-02	4E-02	4E-07		
Residential	**0137-H**	Based on Detects only	5E-01	5E-01	3E-05		BENZENE; CHLOROFORM; ETHYLBENZENE
		Site-related only	1E-01	1E-01	8E-07		

Table H.4-6. Risk Summary for Residential Exposures to Indoor Air
Based on Measured Indoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	HI_{adult}	$Risk_{lifetime}$		
Residential	**0139-H**	Based on Detects only	3E+00	3E+00	3E-04	ISOPROPYL ALCOHOL	1,3-BUTADIENE; 1,2-DICHLOROETHANE; 1,4-DICHLOROBENZENE; BENZENE; CHLOROFORM
		Site-related only	3E-02	3E-02	5E-07		
Residential	**0145-H**	Based on Detects only	3E-01	3E-01	2E-05		1,4-DICHLOROBENZENE; CARBON TETRACHLORIDE; CHLOROFORM
		Site-related only	1E-01	1E-01	7E-07		
Residential	**0146-H**	Based on Detects only	8E-01	8E-01	2E-05		BENZENE; CHLOROFORM
		Site-related only	3E-01	3E-01	1E-06		
Residential	**0148-H**	Based on Detects only	7E-01	7E-01	2E-05		BENZENE; CHLOROFORM
		Site-related only	8E-02	8E-02	6E-07		
Residential	**0153-H**	Based on Detects only	5E-01	5E-01	1E-05		BENZENE; CHLOROFORM
		Site-related only	5E-02	5E-02	5E-07		
Residential	**0162-H**	Based on Detects only	4E-01	4E-01	2E-05		1,2-DICHLOROETHANE; BENZENE; CHLOROFORM
		Site-related only	3E-02	3E-02	5E-07		
Residential	**0166-H**	Based on Detects only	3E+00	3E+00	2E-05	ISOPROPYL ALCOHOL	BENZENE; CHLOROFORM; **TCE**
		Site-related only	6E-01	6E-01	3E-06		
Residential	**0172-H**	Based on Detects only	2E-01	2E-01	4E-06		none
		Site-related only	1E-01	1E-01	6E-07		
Residential	**0173-H**	Based on Detects only	5E-01	5E-01	2E-05		1,2-DICHLOROETHANE; BENZENE; CHLOROFORM
		Site-related only	2E-01	2E-01	1E-06		
Residential	**0174-H**	Based on Detects only	8E-01	8E-01	8E-05		1,2-DICHLOROETHANE; BENZENE; BROMODICHLOROMETHANE; CARBON TETRACHLORIDE; CHLOROFORM; ETHYLBENZENE
		Site-related only	8E-02	8E-02	2E-06		
Residential	**0180-H**	Based on Detects only	9E-02	9E-02	4E-06		none
		Site-related only	8E-03	8E-03	2E-07		
Residential	**0189-H**	Based on Detects only	1E+00	1E+00	1E-05		CHLOROFORM
		Site-related only	2E-01	2E-01	8E-07		
Residential	**0192-H**	Based on Detects only	7E-01	7E-01	2E-05		none
		Site-related only	6E-01	6E-01	3E-06		
Residential	**0193-H**	Based on Detects only	5E-01	5E-01	2E-05		CHLOROFORM; **TCE**
		Site-related only	4E-01	4E-01	3E-06		
Residential	**0194-H**	Based on Detects only	7E-01	7E-01	1E-05		BENZENE; CHLOROFORM; **TCE**
		Site-related only	6E-01	6E-01	3E-06		
Residential	**0195-H**	Based on Detects only	4E-01	4E-01	9E-06		BENZENE; CHLOROFORM
		Site-related only	9E-02	9E-02	1E-06		
Residential	**0197-H [g]**	Based on Detects only	4E+00	4E+00	3E-05	**TCE**	CHLOROFORM; **PCE; TCE**
		Site-related only	3E+00	3E+00	1E-05		
Residential	**0225-H**	Based on Detects only	2E-01	2E-01	1E-05		1,2-DICHLOROETHANE; 1,4-DICHLOROBENZENE; CHLOROFORM
		Site-related only	5E-02	5E-02	9E-07		
Residential	**0230-H**	Based on Detects only	3E-01	3E-01	1E-05		CHLOROFORM
		Site-related only	1E-02	1E-02	2E-07		
Residential	**0255-H**	Based on Detects only	2E-01	2E-01	2E-05		BENZENE; CHLOROFORM
		Site-related only	2E-01	2E-01	1E-06		
Residential	**0256-H**	Based on Detects only	9E-02	9E-02	7E-06		BENZENE; CHLOROFORM
		Site-related only	5E-02	5E-02	9E-07		
Residential	**0263-H**	Based on Detects only	7E-01	7E-01	1E-05		1,2-DICHLOROETHANE; BENZENE
		Site-related only	6E-01	6E-01	3E-06		
Residential	**0273-H**	Based on Detects only	2E-01	2E-01	8E-06		CHLOROFORM
		Site-related only	8E-02	8E-02	5E-07		
Residential	**0274-H**	Based on Detects only	6E-01	6E-01	1E-05		CHLOROFORM
		Site-related only	3E-01	3E-01	1E-06		
Residential	**0277-H**	Based on Detects only	2E-01	2E-01	9E-06		1,2-DICHLOROETHANE; CHLOROFORM
		Site-related only	1E-01	1E-01	7E-07		
Residential	**0302-H**	Based on Detects only	1E-01	1E-01	6E-06		CHLOROFORM
		Site-related only	2E-02	2E-02	2E-07		
Residential	**0315-H**	Based on Detects only	3E-01	3E-01	7E-06		CHLOROFORM
		Site-related only	2E-01	2E-01	1E-06		
Residential	**0329-H**	Based on Detects only	1E-01	1E-01	3E-06		none
		Site-related only	9E-03	9E-03	2E-07		
Residential	**0334-H**	Based on Detects only	1E-01	1E-01	2E-05		BENZENE; CHLOROFORM
		Site-related only	4E-02	4E-02	9E-07		

Table H.4-6. Risk Summary for Residential Exposures to Indoor Air
Based on Measured Indoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	HI_{adult}	$Risk_{lifetime}$		
Residential	**0336-H**	Based on Detects only	5E-01	5E-01	7E-06		BENZENE; CHLOROFORM
		Site-related only	4E-01	4E-01	2E-06		
Residential	**0347-H**	Based on Detects only	3E-01	3E-01	2E-05		1,2-DICHLOROETHANE; CHLOROFORM
		Site-related only	2E-02	2E-02	2E-07		
Residential	**0381-H**	Based on Detects only	3E-01	3E-01	1E-05		BENZENE; CHLOROFORM; ETHYLBENZENE
		Site-related only	2E-02	2E-02	8E-07		
Residential	**0392-H**	Based on Detects only	2E-01	2E-01	6E-06		BENZENE; CHLOROFORM
		Site-related only	2E-02	2E-02	4E-07		
Residential	**0395-H**	Based on Detects only	3E-01	3E-01	1E-05		CHLOROFORM
		Site-related only	1E-01	1E-01	1E-06		
VAMC Building 20 (Valor House) and Building 32 (Fisher House)							
Residential	**B20-I**	Based on Detects only	5E-01	5E-01	2E-05		1,3-BUTADIENE; CHLOROFORM
		Site-related only	1E-01	1E-01	7E-07		
Residential	**B32**	Based on Detects only	3E-01	3E-01	9E-06		1,2-DICHLOROETHANE; CHLOROFORM
		Site-related only	1E-02	1E-02	2E-07		

See **Attachment H.6** for detailed risk estimates for each COPC.

Cancer risk is within the USEPA acceptable risk range between 1E-06 and 1E-04
Non-cancer HI is greater than 1 or cancer risk is greater than 1E-04

Notes:
[a] Risk is presented based on detects only (i.e., includes only the detected COPCs) and for site-related COPCs only. The site-related COPCs include PCE, TCE, cis-1,2-DCE, vinyl chloride, and 1,4-dioxane. Risk for site-related COPCs includes both detects and non-detects.
[b] Chemicals are identified as drivers if the individual chemical-specific HQ is greater than 1 or risk is greater than 1E-06. The list of risk drivers is limited to only those chemicals that were detected in groundwater. Site-related risk drivers are shown in **bold**.
[c] For property 0040-H, interim measures have been taken; risk estimates are based on pre-mitigation conditions.
[d] For property 0051-H, interim measures were taken (i.e., basement cracks were sealed); risk estimates are based on pre-mitigation conditions. Post-mitigation conditions show no unacceptable risks.
[e] For property 0054-H, pressure cycling results indicate indoor sources were the primary contributors to overall exposures; the VI pathway is incomplete.
[f] For property 0059-H, risks are being driven by one historical sample collected within inches of a floor drain. If risk estimates were based on 2020 breathing zone samples, no unacceptable risks are present.
[g] For property 0197-H, interim measures were taken (i.e., portable air filters provided) while the TCE source was investigated further.

All ND = all COPCs were non-detect in all samples
cis-1,2-DCE = cis-1,2-Dichloroethene
COPC = chemicals of potential concern
HI = hazard index
HQ = hazard quotient
none = no individual chemicals had an non-cancer HQ greater than 1 or cancer risk greater than 1E-06
PCE = Tetrachloroethene
TCE = Trichloroethene

Table H.4-7. Risk Summary for Exposures to Indoor Air Inside Schools
Based on Measured Indoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	HI_{adult}	$Risk_{lifetime}$		
School 0045-S							
Students	**0045-S**	Risk for Detects only [c]	**2E-01**	**2E-01**	**6E-07**		
		Site-related only	**2E-01**	**2E-01**	**6E-07**		
Indoor Workers (Teachers, Maintenance Workers)	**0045-S**	Risk for Detects only [c]	---	**4E-01**	**1E-06**		
		Site-related only	---	**4E-01**	**1E-06**		
School 0365-S							
Students	**365-S**	Risk for Detects only [c]	**4E-02**	**5E-02**	**3E-07**		
		Site-related only	**2E-03**	**3E-03**	**2E-08**		
Indoor Workers (Teachers, Maintenance Workers)	**365-S**	Risk for Detects only [c]	---	**1E-01**	**1E-06**		
		Site-related only	---	**5E-03**	**5E-08**		

See **Attachment H.6** for detailed risk estimates for each COPC.

Notes:

[a] Risk is presented based on detects only (i.e., includes only the detected COPCs) and for site-related COPCs only. The site-related COPCs include PCE, TCE, cis-1,2-DCE, vinyl chloride, and 1,4-dioxane. Risk for site-related COPCs includes both detects and non-detects.

[b] Chemicals are identified as drivers if the individual chemical-specific HQ is greater than 1 or risk is greater than 1E-06. The list of risk drivers is limited to only those chemicals that were detected in groundwater. Site-related risk drivers are shown in **bold**.

[c] EPCs for 0045-S are based on HAPSITE results (includes air concentrations for 1,2-dichloroethane, PCE, TCE, and vinyl chloride).

COPC = chemicals of potential concern
HI = hazard index
HQ = hazard quotient
PCE = Tetrachloroethene
TCE = Trichloroethene
VC = vinyl chloride
cis-1,2-DCE = cis-1,2-Dichloroethene

Table H.4-8. Risk Summary for Daycare Children Exposures to Indoor Air Based on Measured Indoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	$Risk_{lifetime}$		
School Daycares						
Daycare children	**0045-S**	Based on Detects only	2E-01	3E-07		
		Site-related only	2E-01	3E-07		
VAMC Building 13						
Daycare children	**B13-I**	Based on Detects only	All ND	All ND		
		Site-related only	2E-02	2E-08		
Churches						
Daycare children	**0366-C**	Based on Detects only	4E-02	5E-07		
		Site-related only	9E-03	3E-08		
Hypothetical Residential Daycares						
Daycare children	**0001-H**	Based on Detects only	9E-02	9E-07		
		Site-related only	3E-02	8E-08		
Daycare children	**0002-H**	Based on Detects only	7E-02	4E-07		
		Site-related only	2E-02	5E-08		
Daycare children	**0003-H**	Based on Detects only	4E-01	2E-05		1,1,2,2-TETRACHLOROETHANE; BENZENE; CHLOROFORM
		Site-related only	5E-02	1E-07		
Daycare children	**0004-H**	Based on Detects only	8E-03	3E-07		
		Site-related only	2E-02	4E-08		
Daycare children	**0008-H**	Based on Detects only	4E-01	4E-06		BENZENE
		Site-related only	3E-02	9E-08		
Daycare children	**0011-H**	Based on Detects only	9E-02	4E-07		
		Site-related only	6E-02	8E-08		
Daycare children	**0012-H**	Based on Detects only	3E-02	4E-07		
		Site-related only	2E-02	5E-08		
Daycare children	**0013-H**	Based on Detects only	2E-02	2E-07		
		Site-related only	2E-02	4E-08		
Daycare children	**0017-H**	Based on Detects only	7E-02	5E-07		
		Site-related only	5E-02	8E-08		
Daycare children	**0018-H**	Based on Detects only	1E+00	7E-06		NAPHTHALENE
		Site-related only	9E-02	2E-07		
Daycare children	**0023-H**	Based on Detects only	1E-02	1E-07		
		Site-related only	1E-02	4E-08		
Daycare children	**0025-H**	Based on Detects only	4E-02	1E-06		
		Site-related only	3E-02	2E-07		
Daycare children	**0026-H**	Based on Detects only	7E-01	2E-06		none
		Site-related only	5E-02	7E-08		
Daycare children	**0027-H**	Based on Detects only	6E-02	1E-06		
		Site-related only	2E-02	4E-08		
Daycare children	**0029-H**	Based on Detects only	5E-02	4E-07		
		Site-related only	2E-02	5E-08		
Daycare children	**0030-H**	Based on Detects only	6E-02	4E-07		
		Site-related only	4E-02	1E-07		
Daycare children	**0036-H**	Based on Detects only	3E-02	4E-07		
		Site-related only	4E-02	9E-08		
Daycare children	**0037-H**	Based on Detects only	3E-01	4E-06		1,2-DICHLOROETHANE
		Site-related only	4E-02	1E-07		
Daycare children	**0038-H**	Based on Detects only	6E-03	4E-07		
		Site-related only	2E-02	4E-08		
Daycare children	**0040-H [c]**	Based on Detects only	2E+00	5E-06	none	CHLOROFORM
		Site-related only	1E+00	2E-06		(none for site-related)
Daycare children	**0041-H**	Based on Detects only	4E-02	4E-07		
		Site-related only	3E-02	4E-08		
Daycare children	**0047-H**	Based on Detects only	3E-02	2E-08		
		Site-related only	4E-02	5E-08		
Daycare children	**0050-H**	Based on Detects only	All ND	All ND		
		Site-related only	2E-02	2E-08		
Daycare children	**0051-H [d]**	Based on Detects only	2E+00	2E-06	none	none
		Site-related only	1E+00	1E-06		
Daycare children	**0052-H**	Based on Detects only	6E-03	5E-09		
		Site-related only	2E-02	3E-08		
Daycare children	**0053-H**	Based on Detects only	1E-01	6E-07		
		Site-related only	1E-01	1E-07		
Daycare children	**0054-H**	Based on Detects only	6E-01	9E-07		
		Site-related only	6E-01	9E-07		
Daycare children	**0055-H**	Based on Detects only	5E-03	4E-09		
		Site-related only	2E-02	3E-08		
Daycare children	**0056-H**	Based on Detects only	2E-02	2E-08		
		Site-related only	4E-02	4E-08		
Daycare children	**0057-H**	Based on Detects only	All ND	All ND		
		Site-related only	2E-02	2E-08		
Daycare children	**0058-H**	Based on Detects only	All ND	All ND		
		Site-related only	2E-02	2E-08		

Table H.4-8. Risk Summary for Daycare Children Exposures to Indoor Air Based on Measured Indoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	$Risk_{lifetime}$		
Daycare children	**0059-H [e]**	Based on Detects only	2E+00	4E-06	none	none
		Site-related only	1E+00	2E-06		
Daycare children	**0060-H**	Based on Detects only	All ND	All ND		
		Site-related only	2E-02	2E-08		
Daycare children	**0061-H**	Based on Detects only	All ND	All ND		
		Site-related only	2E-02	2E-08		
Daycare children	**0062-H**	Based on Detects only	2E-02	2E-07		
		Site-related only	2E-02	3E-08		
Daycare children	**0063-H**	Based on Detects only	1E-02	1E-08		
		Site-related only	3E-02	3E-08		
Daycare children	**0064-H**	Based on Detects only	8E-02	4E-07		
		Site-related only	5E-02	9E-08		
Daycare children	**0065-H**	Based on Detects only	2E-02	3E-07		
		Site-related only	7E-03	3E-08		
Daycare children	**0066-H**	Based on Detects only	5E-02	4E-07		
		Site-related only	1E-02	4E-08		
Daycare children	**0069-H**	Based on Detects only	5E-02	7E-07		
		Site-related only	1E-02	3E-08		
Daycare children	**0071-H**	Based on Detects only	7E-02	7E-07		
		Site-related only	4E-03	1E-08		
Daycare children	**0072-H**	Based on Detects only	3E-02	2E-07		
		Site-related only	3E-03	9E-09		
Daycare children	**0076-H**	Based on Detects only	5E-02	6E-07		
		Site-related only	4E-03	2E-08		
Daycare children	**0091-H**	Based on Detects only	2E-01	2E-06		none
		Site-related only	8E-02	1E-07		
Daycare children	**0098-H**	Based on Detects only	1E-01	9E-07		
		Site-related only	5E-02	8E-08		
Daycare children	**0102-H**	Based on Detects only	2E-01	1E-06		
		Site-related only	4E-03	3E-08		
Daycare children	**0118-H**	Based on Detects only	2E-01	9E-07		
		Site-related only	2E-02	3E-08		
Daycare children	**0121-H**	Based on Detects only	7E-02	5E-07		
		Site-related only	2E-02	4E-08		
Daycare children	**0122-H**	Based on Detects only	6E-02	4E-07		
		Site-related only	2E-02	2E-08		
Daycare children	**0133-H**	Based on Detects only	5E-02	2E-06		none
		Site-related only	3E-03	1E-08		
Daycare children	**0135-H**	Based on Detects only	1E-01	9E-07		
		Site-related only	5E-03	1E-08		
Daycare children	**0137-H**	Based on Detects only	6E-02	7E-07		
		Site-related only	1E-02	3E-08		
Daycare children	**0139-H**	Based on Detects only	4E-01	7E-06		1,4-DICHLOROBENZENE
		Site-related only	4E-03	2E-08		
Daycare children	**0145-H**	Based on Detects only	3E-02	5E-07		
		Site-related only	2E-02	2E-08		
Daycare children	**0146-H**	Based on Detects only	1E-01	5E-07		
		Site-related only	3E-02	5E-08		
Daycare children	**0148-H**	Based on Detects only	9E-02	6E-07		
		Site-related only	1E-02	2E-08		
Daycare children	**0153-H**	Based on Detects only	7E-02	4E-07		
		Site-related only	6E-03	2E-08		
Daycare children	**0162-H**	Based on Detects only	5E-02	7E-07		
		Site-related only	4E-03	2E-08		
Daycare children	**0166-H**	Based on Detects only	3E-01	6E-07		
		Site-related only	8E-02	1E-07		
Daycare children	**0172-H**	Based on Detects only	3E-02	1E-07		
		Site-related only	1E-02	2E-08		
Daycare children	**0173-H**	Based on Detects only	6E-02	6E-07		
		Site-related only	2E-02	3E-08		
Daycare children	**0174-H**	Based on Detects only	1E-01	2E-06		none
		Site-related only	1E-02	6E-08		
Daycare children	**0180-H**	Based on Detects only	1E-02	1E-07		
		Site-related only	1E-03	7E-09		
Daycare children	**0189-H**	Based on Detects only	2E-01	3E-07		
		Site-related only	2E-02	3E-08		
Daycare children	**0192-H**	Based on Detects only	9E-02	5E-07		
		Site-related only	7E-02	9E-08		
Daycare children	**0193-H**	Based on Detects only	7E-02	5E-07		
		Site-related only	6E-02	1E-07		
Daycare children	**0194-H**	Based on Detects only	9E-02	4E-07		
		Site-related only	8E-02	1E-07		

Table H.4-8. Risk Summary for Daycare Children Exposures to Indoor Air Based on Measured Indoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	$Risk_{lifetime}$		
Daycare children	**0195-H**	Based on Detects only	5E-02	3E-07		
		Site-related only	1E-02	4E-08		
Daycare children	**0197-H**	Based on Detects only	4E-01	9E-07		
		Site-related only	4E-01	6E-07		
Daycare children	**0225-H**	Based on Detects only	2E-02	4E-07		
		Site-related only	6E-03	3E-08		
Daycare children	**0230-H**	Based on Detects only	4E-02	3E-07		
		Site-related only	1E-03	7E-09		
Daycare children	**0255-H**	Based on Detects only	3E-02	5E-07		
		Site-related only	2E-02	5E-08		
Daycare children	**0256-H**	Based on Detects only	1E-02	2E-07		
		Site-related only	6E-03	3E-08		
Daycare children	**0263-H**	Based on Detects only	9E-02	3E-07		
		Site-related only	7E-02	1E-07		
Daycare children	**0273-H**	Based on Detects only	3E-02	2E-07		
		Site-related only	9E-03	1E-08		
Daycare children	**0274-H**	Based on Detects only	8E-02	3E-07		
		Site-related only	4E-02	4E-08		
Daycare children	**0277-H**	Based on Detects only	3E-02	3E-07		
		Site-related only	2E-02	2E-08		
Daycare children	**0302-H**	Based on Detects only	2E-02	2E-07		
		Site-related only	2E-03	8E-09		
Daycare children	**0315-H**	Based on Detects only	4E-02	2E-07		
		Site-related only	2E-02	4E-08		
Daycare children	**0329-H**	Based on Detects only	1E-02	1E-07		
		Site-related only	1E-03	6E-09		
Daycare children	**0334-H**	Based on Detects only	1E-02	5E-07		
		Site-related only	5E-03	3E-08		
Daycare children	**0336-H**	Based on Detects only	7E-02	2E-07		
		Site-related only	5E-02	5E-08		
Daycare children	**0347-H**	Based on Detects only	4E-02	6E-07		
		Site-related only	2E-03	8E-09		
Daycare children	**0381-H**	Based on Detects only	4E-02	4E-07		
		Site-related only	3E-03	3E-08		
Daycare children	**0392-H**	Based on Detects only	2E-02	2E-07		
		Site-related only	3E-03	2E-08		
Daycare children	**0395-H**	Based on Detects only	4E-02	3E-07		
		Site-related only	2E-02	4E-08		

See **Attachment H.6** for detailed risk estimates for each COPC.

Cancer risk is within the USEPA acceptable risk range between 1E-06 and 1E-04
Non-cancer HI is greater than 1 or cancer risk is greater than 1E-04

Notes:

[a] Risk is presented based on detects only (i.e., includes only the detected COPCs) and for site-related COPCs only. The site-related COPCs include PCE, TCE, cis-1,2-DCE, vinyl chloride, and 1,4-dioxane. Risk for site-related COPCs includes both detects and non-detects.

[b] Chemicals are identified as drivers if the individual chemical-specific HQ is greater than 1 or risk is greater than 1E-06. The list of risk drivers is limited to only those chemicals that were detected in groundwater. Site-related risk drivers are shown in **bold**.

[c] For property 0040-H, interim measures have been taken; risk estimates are based on pre-mitigation conditions.

[d] For property 0051-H, interim measures were taken (i.e., basement cracks were sealed); risk estimates are based on pre-mitigation conditions. Post-mitigation conditions show no unacceptable risks.

[e] For property 0059-H, risks are being driven by one historical sample collected within inches of a floor drain. If risk estimates were based on 2020 breathing zone samples, no unacceptable risks are present.

All ND = all COPCs were non-detect in all samples
cis-1,2-DCE = cis-1,2-Dichloroethene
COPC = chemicals of potential concern
HI = hazard index
HQ = hazard quotient
none = no individual chemicals had an non-cancer HQ greater than 1 or cancer risk greater than 1E-06
PCE = Tetrachloroethene
TCE = Trichloroethene

Table H.4-9. Risk Summary for Indoor (Commercial) Worker Exposures to Indoor Air
Based on Measured Indoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{adult}	$Risk_{lifetime}$		
Churches						
Indoor Worker	**0366-C**	Based on Detects only	8E-02	4E-06		none
		Site-related only	2E-02	2E-07		
Residental Properties						
Indoor Worker	**0001-H**	Based on Detects only	2E-01	7E-06		1,2-DICHLOROETHANE; CHLOROFORM
		Site-related only	6E-02	3E-07		
Indoor Worker	**0002-H**	Based on Detects only	1E-01	3E-06		CHLOROFORM
		Site-related only	4E-02	2E-07		
Indoor Worker	**0003-H**	Based on Detects only	8E-01	1E-04		1,1,2,2-TETRACHLOROETHANE; BENZENE; CHLOROFORM; ETHYLBENZENE
		Site-related only	1E-01	6E-07		
Indoor Worker	**0004-H**	Based on Detects only	2E-02	2E-06		CHLOROFORM
		Site-related only	3E-02	2E-07		
Indoor Worker	**0008-H**	Based on Detects only	8E-01	3E-05		BENZENE; ETHYLBENZENE
		Site-related only	6E-02	3E-07		
Indoor Worker	**0011-H**	Based on Detects only	2E-01	3E-06		none
		Site-related only	1E-01	5E-07		
Indoor Worker	**0012-H**	Based on Detects only	6E-02	4E-06		CHLOROFORM
		Site-related only	4E-02	2E-07		
Indoor Worker	**0013-H**	Based on Detects only	4E-02	2E-06		
		Site-related only	3E-02	1E-07		
Indoor Worker	**0017-H**	Based on Detects only	1E-01	4E-06		CHLOROFORM
		Site-related only	1E-01	4E-07		
Indoor Worker	**0018-H**	Based on Detects only	2E+00	6E-05	none	1,2-DIBROMOETHANE; 1,2-DICHLOROETHANE; BENZENE; BENZYL CHLORIDE; CHLOROFORM; HEXACHLORO-1,3-BUTADIENE; NAPHTHALENE
		Site-related only	2E-01	8E-07		
Indoor Worker	**0023-H**	Based on Detects only	3E-02	9E-07		
		Site-related only	2E-02	1E-07		
Indoor Worker	**0025-H**	Based on Detects only	8E-02	8E-06		1,4-DICHLOROBENZENE; CHLOROFORM
		Site-related only	5E-02	1E-06		
Indoor Worker	**0026-H**	Based on Detects only	1E+00	2E-05		1,2-DICHLOROETHANE; BROMODICHLOROMETHANE; CHLOROFORM
		Site-related only	1E-01	4E-07		
Indoor Worker	**0027-H**	Based on Detects only	1E-01	1E-05		1,2-DICHLOROETHANE; 1,4-DICHLOROBENZENE
		Site-related only	3E-02	2E-07		
Indoor Worker	**0029-H**	Based on Detects only	9E-02	3E-06		CHLOROFORM
		Site-related only	4E-02	3E-07		
Indoor Worker	**0030-H**	Based on Detects only	1E-01	3E-06		1,2-DICHLOROETHANE
		Site-related only	8E-02	3E-07		
Indoor Worker	**0036-H**	Based on Detects only	5E-02	3E-06		CHLOROFORM
		Site-related only	7E-02	3E-07		
Indoor Worker	**0037-H**	Based on Detects only	5E-01	3E-05		,2-DICHLOROETHANE; BENZENE; BROMODICHLOROMETHANE; CHLOROFORM
		Site-related only	7E-02	9E-07		
Indoor Worker	**0038-H**	Based on Detects only	1E-02	3E-06		CHLOROFORM
		Site-related only	3E-02	2E-07		
Indoor Worker	**0040-H [c]**	Based on Detects only	3E+00	3E-05	none	1,3-BUTADIENE; BENZENE; CHLOROFORM; **PCE; TCE**
		Site-related only	2E+00	8E-06		
Indoor Worker	**0041-H**	Based on Detects only	8E-02	3E-06		CHLOROFORM
		Site-related only	6E-02	2E-07		
Indoor Worker	**0047-H**	Based on Detects only	5E-02	2E-07		
		Site-related only	8E-02	3E-07		
Indoor Worker	**0050-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	9E-08		
Indoor Worker	**0051-H [d]**	Based on Detects only	3E+00	2E-05	**PCE**	CHLOROFORM; **PCE**
		Site-related only	2E+00	9E-06		
Indoor Worker	**0052-H**	Based on Detects only	1E-02	4E-08		
		Site-related only	4E-02	1E-07		

Table H.4-9. Risk Summary for Indoor (Commercial) Worker Exposures to Indoor Air
Based on Measured Indoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{adult}	$Risk_{lifetime}$		
Indoor Worker	**0053-H**	Based on Detects only	3E-01	5E-06		CHLOROFORM
		Site-related only	2E-01	8E-07		
Indoor Worker	**0054-H [e]**	Based on Detects only	1E+00	4E-06		**TCE**
		Site-related only	1E+00	4E-06		
Indoor Worker	**0055-H**	Based on Detects only	9E-03	3E-08		
		Site-related only	4E-02	1E-07		
Indoor Worker	**0056-H**	Based on Detects only	4E-02	1E-07		
		Site-related only	7E-02	2E-07		
Indoor Worker	**0057-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	9E-08		
Indoor Worker	**0058-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	9E-08		
Indoor Worker	**0059-H [f]**	Based on Detects only	3E+00	3E-05	none	**1,4-DIOXANE**; CHLOROFORM; HEXACHLORO-1,3-BUTADIENE; **PCE; TCE**
		Site-related only	3E+00	1E-05		
Indoor Worker	**0060-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	9E-08		
Indoor Worker	**0061-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	9E-08		
Indoor Worker	**0062-H**	Based on Detects only	4E-02	2E-06		none
		Site-related only	3E-02	1E-07		
Indoor Worker	**0063-H**	Based on Detects only	2E-02	8E-08		
		Site-related only	5E-02	2E-07		
Indoor Worker	**0064-H**	Based on Detects only	1E-01	3E-06		none
		Site-related only	1E-01	6E-07		
Indoor Worker	**0065-H**	Based on Detects only	4E-02	2E-06		none
		Site-related only	1E-02	1E-07		
Indoor Worker	**0066-H**	Based on Detects only	9E-02	3E-06		none
		Site-related only	3E-02	2E-07		
Indoor Worker	**0069-H**	Based on Detects only	9E-02	5E-06		1,2-DICHLOROETHANE
		Site-related only	2E-02	2E-07		
Indoor Worker	**0071-H**	Based on Detects only	1E-01	5E-06		1,2-DICHLOROETHANE; CHLOROFORM
		Site-related only	8E-03	5E-08		
Indoor Worker	**0072-H**	Based on Detects only	5E-02	1E-06		none
		Site-related only	5E-03	6E-08		
Indoor Worker	**0076-H**	Based on Detects only	9E-02	5E-06		BENZENE
		Site-related only	8E-03	1E-07		
Indoor Worker	**0091-H**	Based on Detects only	3E-01	1E-05		BROMODICHLOROMETHANE; CHLOROFORM
		Site-related only	2E-01	6E-07		
Indoor Worker	**0098-H**	Based on Detects only	2E-01	7E-06		BENZENE
		Site-related only	1E-01	4E-07		
Indoor Worker	**0102-H**	Based on Detects only	3E-01	9E-06		1,2-DICHLOROETHANE; BENZENE; CHLOROFORM
		Site-related only	8E-03	2E-07		
Indoor Worker	**0118-H**	Based on Detects only	3E-01	6E-06		CHLOROFORM
		Site-related only	3E-02	2E-07		
Indoor Worker	**0121-H**	Based on Detects only	1E-01	4E-06		CHLOROFORM
		Site-related only	3E-02	2E-07		
Indoor Worker	**0122-H**	Based on Detects only	1E-01	3E-06		none
		Site-related only	3E-02	2E-07		
Indoor Worker	**0133-H**	Based on Detects only	9E-02	1E-05		BROMODICHLOROMETHANE; CHLOROFORM
		Site-related only	6E-03	8E-08		
Indoor Worker	**0135-H**	Based on Detects only	2E-01	7E-06		CHLOROFORM; ETHYLBENZENE
		Site-related only	1E-02	8E-08		
Indoor Worker	**0137-H**	Based on Detects only	1E-01	6E-06		BENZENE; CHLOROFORM
		Site-related only	2E-02	1E-07		
Indoor Worker	**0139-H**	Based on Detects only	7E-01	6E-05		1,3-BUTADIENE; 1,4-DICHLOROBENZENE; CHLOROFORM
		Site-related only	8E-03	1E-07		

Table H.4-9. Risk Summary for Indoor (Commercial) Worker Exposures to Indoor Air
Based on Measured Indoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{adult}	$Risk_{lifetime}$		
Indoor Worker	**0145-H**	Based on Detects only	6E-02	4E-06		1,4-DICHLOROBENZENE
		Site-related only	3E-02	1E-07		
Indoor Worker	**0146-H**	Based on Detects only	2E-01	4E-06		CHLOROFORM
		Site-related only	6E-02	3E-07		
Indoor Worker	**0148-H**	Based on Detects only	2E-01	4E-06		CHLOROFORM
		Site-related only	2E-02	1E-07		
Indoor Worker	**0153-H**	Based on Detects only	1E-01	3E-06		CHLOROFORM
		Site-related only	1E-02	1E-07		
Indoor Worker	**0162-H**	Based on Detects only	1E-01	5E-06		1,2-DICHLOROETHANE; BENZENE
		Site-related only	8E-03	1E-07		
Indoor Worker	**0166-H**	Based on Detects only	6E-01	4E-06		CHLOROFORM
		Site-related only	1E-01	5E-07		
Indoor Worker	**0172-H**	Based on Detects only	5E-02	1E-06		none
		Site-related only	3E-02	1E-07		
Indoor Worker	**0173-H**	Based on Detects only	1E-01	5E-06		CHLOROFORM
		Site-related only	4E-02	2E-07		
Indoor Worker	**0174-H**	Based on Detects only	2E-01	2E-05		1,2-DICHLOROETHANE; BROMODICHLOROMETHANE; CHLOROFORM
		Site-related only	2E-02	3E-07		
Indoor Worker	**0180-H**	Based on Detects only	2E-02	9E-07		
		Site-related only	2E-03	4E-08		
Indoor Worker	**0189-H**	Based on Detects only	3E-01	2E-06		CHLOROFORM
		Site-related only	4E-02	2E-07		
Indoor Worker	**0192-H**	Based on Detects only	2E-01	4E-06		CHLOROFORM
		Site-related only	1E-01	5E-07		
Indoor Worker	**0193-H**	Based on Detects only	1E-01	4E-06		CHLOROFORM
		Site-related only	1E-01	5E-07		
Indoor Worker	**0194-H**	Based on Detects only	2E-01	3E-06		none
		Site-related only	1E-01	6E-07		
Indoor Worker	**0195-H**	Based on Detects only	9E-02	2E-06		none
		Site-related only	2E-02	2E-07		
Indoor Worker	**0197-H**	Based on Detects only	8E-01	5E-06		CHLOROFORM; **TCE**
		Site-related only	8E-01	2E-06		
Indoor Worker	**0225-H**	Based on Detects only	5E-02	3E-06		none
		Site-related only	1E-02	2E-07		
Indoor Worker	**0230-H**	Based on Detects only	8E-02	3E-06		CHLOROFORM
		Site-related only	3E-03	4E-08		
Indoor Worker	**0255-H**	Based on Detects only	5E-02	4E-06		CHLOROFORM
		Site-related only	4E-02	3E-07		
Indoor Worker	**0256-H**	Based on Detects only	2E-02	2E-06		none
		Site-related only	1E-02	2E-07		
Indoor Worker	**0263-H**	Based on Detects only	2E-01	2E-06		none
		Site-related only	1E-01	6E-07		
Indoor Worker	**0273-H**	Based on Detects only	6E-02	2E-06		none
		Site-related only	2E-02	1E-07		
Indoor Worker	**0274-H**	Based on Detects only	2E-01	2E-06		none
		Site-related only	7E-02	3E-07		
Indoor Worker	**0277-H**	Based on Detects only	6E-02	2E-06		none
		Site-related only	3E-02	1E-07		
Indoor Worker	**0302-H**	Based on Detects only	3E-02	1E-06		
		Site-related only	4E-03	4E-08		
Indoor Worker	**0315-H**	Based on Detects only	8E-02	2E-06		none
		Site-related only	5E-02	2E-07		
Indoor Worker	**0329-H**	Based on Detects only	2E-02	8E-07		
		Site-related only	2E-03	4E-08		
Indoor Worker	**0334-H**	Based on Detects only	2E-02	4E-06		CHLOROFORM
		Site-related only	9E-03	2E-07		

Table H.4-9. Risk Summary for Indoor (Commercial) Worker Exposures to Indoor Air
Based on Measured Indoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{adult}	$Risk_{lifetime}$		
Indoor Worker	**0336-H**	Based on Detects only	1E-01	2E-06		none
		Site-related only	9E-02	4E-07		
Indoor Worker	**0347-H**	Based on Detects only	7E-02	5E-06		1,2-DICHLOROETHANE; CHLOROFORM
		Site-related only	4E-03	5E-08		
Indoor Worker	**0381-H**	Based on Detects only	7E-02	3E-06		CHLOROFORM
		Site-related only	6E-03	2E-07		
Indoor Worker	**0392-H**	Based on Detects only	4E-02	1E-06		
		Site-related only	6E-03	8E-08		
Indoor Worker	**0395-H**	Based on Detects only	8E-02	2E-06		none
		Site-related only	3E-02	2E-07		

See **Attachment H.6** for detailed risk estimates for each COPC.

Cancer risk is within the USEPA acceptable risk range between 1E-06 and 1E-04
Non-cancer HI is greater than 1 or cancer risk is greater than 1E-04

Notes:
[a] Risk is presented based on detects only (i.e., includes only the detected COPCs) and for site-related COPCs only. The site-related COPCs include PCE, TCE, cis-1,2-DCE, vinyl chloride, and 1,4-dioxane. Risk for site-related COPCs includes both detects and non-detects.
[b] Chemicals are identified as drivers if the individual chemical-specific HQ is greater than 1 or risk is greater than 1E-06. The list of risk drivers is limited to only those chemicals that were detected in groundwater. Site-related risk drivers are shown in **bold**.
[c] For property 0040-H, interim measures have been taken; risk estimates are based on pre-mitigation conditions.
[d] For property 0051-H, interim measures were taken (i.e., basement cracks were sealed); risk estimates are based on pre-mitigation conditions. Post-mitigation conditions show no unacceptable risks.
[e] For property 0054-H, pressure cycling results indicate indoor sources were the primary contributors to overall exposures; the VI pathway is incomplete.
[f] For property 0059-H, risks are being driven by one historical sample collected within inches of a floor drain. If risk estimates were based on 2020 breathing zone samples, no unacceptable risks are present.

All ND = all COPCs were non-detect in all samples
cis-1,2-DCE = cis-1,2-Dichloroethene
COPC = chemicals of potential concern
HI = hazard index
HQ = hazard quotient
none = no individual chemicals had an non-cancer HQ greater than 1 or cancer risk greater than 1E-06
PCE = Tetrachloroethene
TCE = Trichloroethene

Table H.4-10. Risk Summary for Worker Exposures to Indoor Air Inside VAMC Buildings
Based on Measured Indoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{adult}	$Risk_{lifetime}$		
Indoor Worker	**Building 6 [c]**	Based on Detects only	7E+00	3E-05	**PCE**	CHLOROFORM; **PCE; TCE**
		Site-related only	6E+00	2E-05		
Indoor Worker	**Building 7**	Based on Detects only	3E+00	8E-06	ETHYL ACETATE	BENZENE; **TCE**
		Site-related only	9E-01	3E-06		
Indoor Worker	**Building 13**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Indoor Worker	**Building 20**	Based on Detects only	1E-01	4E-06		1,3-BUTADIENE
		Site-related only	3E-02	1E-07		
Indoor Worker	**Building 32**	Based on Detects only	8E-02	2E-06		none
		Site-related only	3E-03	4E-08		

See **Attachment H.6** for detailed risk estimates for each COPC.

Cancer risk is within the USEPA acceptable risk range between 1E-06 and 1E-04
Non-cancer HI is greater than 1 or cancer risk is greater than 1E-04

Notes:
[a] Risk is presented based on detects only (i.e., includes only the detected COPCs) and for site-related COPCs only. The site-related COPCs include PCE, TCE, cis-1,2-DCE, vinyl chloride, and 1,4-dioxane. Risk for site-related COPCs includes both detects and non-detects.
[b] Chemicals are identified as drivers if the individual chemical-specific HQ is greater than 1 or risk is greater than 1E-06. The list of risk drivers is limited to only those chemicals that were detected in groundwater. Site-related risk drivers are shown in **bold**.
[c] Indoor sources were present and removed from Building 6. If risk estimates were based on the most recent sampling (collected after sources were removed), no unacceptable risks are present.

All ND = all COPCs were non-detect in all samples
cis-1,2-DCE = cis-1,2-Dichloroethene
COPC = chemicals of potential concern
HI = hazard index
HQ = hazard quotient
none = no individual chemicals had an non-cancer HQ greater than 1 or cancer risk greater than 1E-06
PCE = Tetrachloroethene
TCE = Trichloroethene
VAMC = Veterans Affairs Medical Center

Table H.4-11. Risk-based Screening Levels for Groundwater, Soil Gas, and Indoor Air
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Organic COPC	CAS Number	Residential Risk-based Screening Levels [a]				Industrial Risk-based Screening Levels [a]		
		Groundwater		Soil Gas	Indoor Air	Groundwater	Soil Gas	Indoor Air
		Tap Water RSL (µg/L)	VISL (µg/L)	VISL (µg/m^3)	RSL (µg/m^3)	VISL (µg/L)	VISL (µg/m^3)	RSL (µg/m^3)
1,3-BUTADIENE	106-99-0	0.071	0.031	3.1	0.094	0.14	13.6	0.41
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.076	3.2	1.6	0.048	14	7.1	0.21
1,1,2-TRICHLOROETHANE	79-00-5	0.28	5.2	5.9	0.18	23	26	0.77
1,2,4-TRICHLOROBENZENE	120-82-1	1.2	36	70	2.1	151	292	8.8
1,2,4-TRIMETHYLBENZENE	95-63-6	56	248	2,090	63	1,040	8,760	260
1,2-DIBROMOETHANE	106-93-4	0.0075	0.176	0.16	0.0047	0.77	0.68	0.02
1,2-DICHLOROETHANE	107-06-2	0.17	2.2	3.6	0.11	9.8	15.7	0.47
1,2-DICHLOROPROPANE	78-87-5	0.85	6.6	25	0.76	28.7	110	3.3
1,3,5-Trimethylbenzene	108-67-8	60	175	2,090	63	733	8,760	260
1,4-DICHLOROBENZENE	106-46-7	0.48	2.6	8.5	0.26	11.3	37.2	1.1
1,4-DIOXANE	**123-91-1**	**0.46**	**2,860**	**19**	**0.56**	**12,500**	**82**	**2.5**
2-HEXANONE	591-78-6	38	8,210	1,040	31	34,500	4,380	130
BENZENE	71-43-2	0.46	1.6	12	0.36	6.9	52	1.6
BENZYL CHLORIDE	100-44-7	0.089	3.4	1.9	0.057	14.9	8.3	0.25
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	5.6	NA	NA	1.2	NA	NA	5.1
BROMODICHLOROMETHANE	75-27-4	0.13	0.88	2.5	0.076	3.8	11	0.33
BROMOMETHANE	74-83-9	7.5	17	174	5.2	73	730	22
CARBON TETRACHLORIDE	56-23-5	0.46	0.42	16	0.47	1.8	68	2
CHLOROFORM	67-66-3	0.22	0.81	4.1	0.12	3.6	18	0.53
CIS-1,2-DICHLOROETHENE	**156-59-2**	**36**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
DIBROMOCHLOROMETHANE	124-48-1	0.87	NA	NA	NA	NA	NA	NA
ETHYL ACETATE	141-78-6	140	13,300	2,430	73	56,000	10,200	310
ETHYLBENZENE	100-41-4	1.5	3.5	37	1.1	15	164	4.9
HEXACHLORO-1,3-BUTADIENE	87-68-3	0.14	0.30	4.3	0.13	1.3	19	0.56
ISOPROPYL ALCOHOL	67-63-0	410	630,000	6,950	210	2,650,000	29,200	880
M,P-XYLENE	108-38-3	190	355	3,480	100	1490	14,600	440
METHYLENE CHLORIDE	75-09-2	11	763	3,380	100	9,230	40,900	1,200
NAPHTHALENE	91-20-3	0.12	4.6	2.8	0.083	20	12	0.36
O-XYLENE	95-47-6	190	492	3,480	100	2,070	14,600	440
TETRACHLOROETHENE	**127-18-4**	**11**	**15**	**360**	**11**	**65**	**1,570**	**47**
TRICHLOROETHENE	**79-01-6**	**0.49**	**1.2**	**16**	**0.48**	**7.4**	**100**	**3**
VINYL ACETATE	108-05-4	410	9,980	6,950	210	41,900	29,200	880
VINYL CHLORIDE	**75-01-4**	**0.019**	**0.15**	**5.6**	**0.17**	**2.5**	**93**	**2.8**

[a] Based on a target cancer risk of 1E-06 and target hazard quotient of 1. May 2022 version of the EPA RSLs and VISLs.
The site-related COPCs are indicated in **bold** text.

RSL = regional screening level
µg/L = micrograms per liter
µg/m^3 = micrograms per cubic meter of air
VISL = vapor intrustion screening level

Table H.4-12. Risk Summary for Residential Exposures to Outdoor Air Based on Measured Outdoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	HI_{adult}	$Risk_{lifetime}$		
Residential	**0001-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		
Residential	**0002-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		
Residential	**0003-H**	Risk for Detects only	6E-03	2E-02	1E-06		
		Site-related only	1E-03	5E-03	1E-07		
Residential	**0004-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		
Residential	**0011-H**	Risk for Detects only	2E-02	6E-02	3E-06		none
		Site-related only	8E-03	3E-02	2E-07		
Residential	**0012-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		
Residential	**0013-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		
Residential	**0025-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		
Residential	**0026-H**	Risk for Detects only	2E-03	9E-03	7E-07		
		Site-related only	3E-02	1E-01	5E-07		
Residential	**0027-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		
Residential	**0029-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		
Residential	**0030-H**	Risk for Detects only	2E-03	6E-03	3E-07		
		Site-related only	4E-02	1E-01	4E-07		
Residential	**0037-H**	Risk for Detects only	1E-02	4E-02	2E-06		none
		Site-related only	5E-03	2E-02	2E-07		
Residential	**0040-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		
Residential	**0041-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		
Residential	**0047-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		
Residential	**0050-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		
Residential	**0051-H**	Risk for Detects only	3E-03	1E-02	8E-07		
		Site-related only	7E-03	3E-02	2E-07		
Residential	**0052-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		
Residential	**0053-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		
Residential	**0054-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		

Table H.4-12. Risk Summary for Residential Exposures to Outdoor Air Based on Measured Outdoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	HI_{adult}	$Risk_{lifetime}$		
Residential	**0055-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		
Residential	**0056-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		
Residential	**0058-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		
Residential	**0059-H**	Risk for Detects only	3E-03	1E-02	7E-07		
		Site-related only	7E-03	3E-02	2E-07		
Residential	**0060-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		
Residential	**0061-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		
Residential	**0062-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		
Residential	**0063-H**	Risk for Detects only	All ND	All ND	All ND		
		Site-related only	7E-03	3E-02	8E-08		
Residential	**0064-H**	Risk for Detects only	5E-03	2E-02	7E-07		
		Site-related only	2E-03	7E-03	1E-07		
Residential	**0065-H**	Risk for Detects only	3E-03	1E-02	6E-07		
		Site-related only	3E-03	1E-02	1E-07		
Residential	**0066-H**	Risk for Detects only	7E-03	2E-02	1E-06		
		Site-related only	3E-03	1E-02	1E-07		
Residential	**0071-H**	Risk for Detects only	2E-03	7E-03	6E-07		
		Site-related only	4E-03	1E-02	1E-07		
Residential	**0076-H**	Risk for Detects only	2E-03	7E-03	6E-07		
		Site-related only	3E-03	1E-02	1E-07		
Residential	**0091-H**	Risk for Detects only	3E-03	1E-02	1E-06		
		Site-related only	4E-03	1E-02	2E-07		
Residential	**0098-H**	Risk for Detects only	7E-03	3E-02	1E-06		
		Site-related only	3E-03	1E-02	1E-07		
Residential	**0102-H**	Risk for Detects only	1E-03	4E-03	8E-07		
		Site-related only	3E-03	1E-02	1E-07		
Residential	**0118-H**	Risk for Detects only	2E-03	6E-03	5E-07		
		Site-related only	3E-03	1E-02	1E-07		
Residential	**0121-H**	Risk for Detects only	6E-03	2E-02	1E-06		
		Site-related only	3E-03	1E-02	1E-07		
Residential	**0122-H**	Risk for Detects only	6E-03	2E-02	1E-06		
		Site-related only	3E-03	1E-02	1E-07		
Residential	**0135-H**	Risk for Detects only	2E-03	6E-03	6E-07		
		Site-related only	3E-03	1E-02	1E-07		
Residential	**0139-H**	Risk for Detects only	2E-03	6E-03	6E-07		
		Site-related only	4E-03	1E-02	1E-07		
Residential	**0146-H**	Risk for Detects only	2E-03	7E-03	6E-07		
		Site-related only	3E-03	1E-02	8E-08		

Table H.4-12. Risk Summary for Residential Exposures to Outdoor Air
Based on Measured Outdoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	HI_{adult}	$Risk_{lifetime}$		
Residential	**0148-H**	Risk for Detects only	8E-03	3E-02	1E-06		
		Site-related only	3E-03	1E-02	1E-07		
Residential	**0153-H**	Risk for Detects only	9E-03	3E-02	2E-06		none
		Site-related only	3E-03	1E-02	7E-08		
Residential	**0162-H**	Risk for Detects only	2E-03	8E-03	6E-07		
		Site-related only	3E-03	1E-02	1E-07		
Residential	**0173-H**	Risk for Detects only	2E-03	6E-03	6E-07		
		Site-related only	3E-03	1E-02	1E-07		
Residential	**0174-H**	Risk for Detects only	1E-03	5E-03	5E-07		
		Site-related only	3E-03	1E-02	1E-07		
Residential	**0302-H**	Risk for Detects only	4E-03	1E-02	7E-07		
		Site-related only	3E-03	1E-02	1E-07		
Residential	**0334-H**	Risk for Detects only	8E-03	3E-02	9E-07		
		Site-related only	5E-03	2E-02	2E-07		
Residential	**0381-H**	Risk for Detects only	3E-03	1E-02	7E-07		
		Site-related only	3E-03	9E-03	7E-08		

See **Attachment H.8** for detailed risk estimates for each COPC.

Cancer risk is within the USEPA acceptable risk range between 1E-06 and 1E-04

Notes:

[a] Risk is presented based on detects only (i.e., includes only the detected COPCs) and for site-related COPCs only. The site-related COPCs include PCE, TCE, cis-1,2-DCE, vinyl chloride, and 1,4-dioxane. Risk for site-related COPCs includes both detects and non-detects.

[b] Chemicals are identified as drivers if the individual chemical-specific HQ is greater than 1 or risk is greater than 1E-06. The list of risk drivers is limited to only those chemicals that were detected in groundwater. Site-related risk drivers are shown in **bold**.

All ND = all COPCs were non-detect in all samples
cis-1,2-DCE = cis-1,2-Dichloroethene
COPC = chemicals of potential concern
HI = hazard index
HQ = hazard quotient
none = no individual chemicals had an non-cancer HQ greater than 1 or cancer risk greater than 1E-06
PCE = Tetrachloroethene
TCE = Trichloroethene

Table H.4-13. Risk Summary for Daycare Children Exposures to Outdoor Air Based on Measured Outdoor Air Data (Maximum Concentrations)

700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	$Risk_{lifetime}$		
School Daycares						
Daycare children	**0045-S**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Hypothetical Residential Daycares						
Daycare children	**0001-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Daycare children	**0002-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Daycare children	**0003-H**	Based on Detects only	3E-03	6E-08		
		Site-related only	9E-04	5E-09		
Daycare children	**0004-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Daycare children	**0011-H**	Based on Detects only	1E-02	1E-07		
		Site-related only	5E-03	9E-09		
Daycare children	**0012-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Daycare children	**0013-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Daycare children	**0025-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Daycare children	**0026-H**	Based on Detects only	1E-03	3E-08		
		Site-related only	2E-02	3E-08		
Daycare children	**0027-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Daycare children	**0029-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Daycare children	**0030-H**	Based on Detects only	1E-03	1E-08		
		Site-related only	2E-02	3E-08		
Daycare children	**0037-H**	Based on Detects only	7E-03	7E-08		
		Site-related only	3E-03	8E-09		
Daycare children	**0040-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Daycare children	**0041-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Daycare children	**0047-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Daycare children	**0050-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Daycare children	**0051-H**	Based on Detects only	2E-03	4E-08		
		Site-related only	4E-03	1E-08		
Daycare children	**0052-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Daycare children	**0053-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Daycare children	**0054-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		

Table H.4-13. Risk Summary for Daycare Children Exposures to Outdoor Air Based on Measured Outdoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	$Risk_{lifetime}$		
Daycare children	**0055-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Daycare children	**0056-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Daycare children	**0058-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Daycare children	**0059-H**	Based on Detects only	2E-03	3E-08		
		Site-related only	4E-03	1E-08		
Daycare children	**0060-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Daycare children	**0061-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Daycare children	**0062-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Daycare children	**0063-H**	Based on Detects only	All ND	All ND		
		Site-related only	4E-03	6E-09		
Daycare children	**0064-H**	Based on Detects only	3E-03	3E-08		
		Site-related only	1E-03	5E-09		
Daycare children	**0065-H**	Based on Detects only	2E-03	3E-08		
		Site-related only	2E-03	7E-09		
Daycare children	**0066-H**	Based on Detects only	4E-03	6E-08		
		Site-related only	2E-03	6E-09		
Daycare children	**0071-H**	Based on Detects only	1E-03	3E-08		
		Site-related only	2E-03	7E-09		
Daycare children	**0076-H**	Based on Detects only	1E-03	3E-08		
		Site-related only	2E-03	7E-09		
Daycare children	**0091-H**	Based on Detects only	2E-03	5E-08		
		Site-related only	2E-03	8E-09		
Daycare children	**0098-H**	Based on Detects only	4E-03	6E-08		
		Site-related only	2E-03	7E-09		
Daycare children	**0102-H**	Based on Detects only	7E-04	3E-08		
		Site-related only	2E-03	6E-09		
Daycare children	**0118-H**	Based on Detects only	9E-04	2E-08		
		Site-related only	2E-03	7E-09		
Daycare children	**0121-H**	Based on Detects only	3E-03	6E-08		
		Site-related only	2E-03	6E-09		
Daycare children	**0122-H**	Based on Detects only	4E-03	5E-08		
		Site-related only	2E-03	7E-09		
Daycare children	**0135-H**	Based on Detects only	1E-03	3E-08		
		Site-related only	2E-03	6E-09		
Daycare children	**0139-H**	Based on Detects only	1E-03	3E-08		
		Site-related only	2E-03	7E-09		
Daycare children	**0146-H**	Based on Detects only	1E-03	3E-08		
		Site-related only	2E-03	4E-09		
Daycare children	**0148-H**	Based on Detects only	5E-03	7E-08		
		Site-related only	2E-03	6E-09		

Table H.4-13. Risk Summary for Daycare Children Exposures to Outdoor Air Based on Measured Outdoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	$Risk_{lifetime}$		
Daycare children	**0153-H**	Based on Detects only	5E-03	7E-08		
		Site-related only	2E-03	4E-09		
Daycare children	**0162-H**	Based on Detects only	1E-03	3E-08		
		Site-related only	2E-03	6E-09		
Daycare children	**0173-H**	Based on Detects only	1E-03	3E-08		
		Site-related only	2E-03	7E-09		
Daycare children	**0174-H**	Based on Detects only	9E-04	2E-08		
		Site-related only	2E-03	6E-09		
Daycare children	**0302-H**	Based on Detects only	2E-03	3E-08		
		Site-related only	2E-03	5E-09		
Daycare children	**0334-H**	Based on Detects only	5E-03	4E-08		
		Site-related only	3E-03	8E-09		
Daycare children	**0381-H**	Based on Detects only	2E-03	3E-08		
		Site-related only	1E-03	4E-09		

See **Attachment H.8** for detailed risk estimates for each COPC.

Notes:

[a] Risk is presented based on detects only (i.e., includes only the detected COPCs) and for site-related COPCs only. The site-related COPCs include PCE, TCE, cis-1,2-DCE, vinyl chloride, and 1,4-dioxane. Risk for site-related COPCs includes both detects and non-detects.

[b] Chemicals are identified as drivers if the individual chemical-specific HQ is greater than 1 or risk is greater than 1E-06. The list of risk drivers is limited to only those chemicals that were detected in groundwater. Site-related risk drivers are shown in **bold**.

All ND = all COPCs were non-detect in all samples
cis-1,2-DCE = cis-1,2-Dichloroethene
COPC = chemicals of potential concern
HI = hazard index
HQ = hazard quotient
PCE = Tetrachloroethene
TCE = Trichloroethene

Table H.4-14. Risk Summary for Outdoor Worker Exposures to Outdoor Air Based on Measured Outdoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{adult}	$Risk_{lifetime}$		
Outdoor Worker	**0001-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Outdoor Worker	**0002-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Outdoor Worker	**0003-H**	Based on Detects only	3E-02	2E-06		none
		Site-related only	6E-03	2E-07		
Outdoor Worker	**0004-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Outdoor Worker	**0011-H**	Based on Detects only	7E-02	4E-06		CHLOROFORM
		Site-related only	4E-02	2E-07		
Outdoor Worker	**0012-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Outdoor Worker	**0013-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Outdoor Worker	**0025-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Outdoor Worker	**0026-H**	Based on Detects only	1E-02	1E-06		
		Site-related only	2E-01	6E-07		
Outdoor Worker	**0027-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Outdoor Worker	**0029-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Outdoor Worker	**0030-H**	Based on Detects only	7E-03	4E-07		
		Site-related only	2E-01	6E-07		
Outdoor Worker	**0037-H**	Based on Detects only	5E-02	2E-06		none
		Site-related only	2E-02	2E-07		
Outdoor Worker	**0040-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Outdoor Worker	**0041-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Outdoor Worker	**0047-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Outdoor Worker	**0050-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Outdoor Worker	**0051-H**	Based on Detects only	1E-02	1E-06		
		Site-related only	3E-02	3E-07		
Outdoor Worker	**0052-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Outdoor Worker	**0053-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Outdoor Worker	**0054-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Outdoor Worker	**0055-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Outdoor Worker	**0056-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		

Table H.4-14. Risk Summary for Outdoor Worker Exposures to Outdoor Air Based on Measured Outdoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{adult}	$Risk_{lifetime}$		
Outdoor Worker	**0058-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Outdoor Worker	**0059-H**	Based on Detects only	1E-02	1E-06		
		Site-related only	3E-02	3E-07		
Outdoor Worker	**0060-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Outdoor Worker	**0061-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Outdoor Worker	**0062-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Outdoor Worker	**0063-H**	Based on Detects only	All ND	All ND		
		Site-related only	3E-02	1E-07		
Outdoor Worker	**0064-H**	Based on Detects only	2E-02	1E-06		
		Site-related only	9E-03	1E-07		
Outdoor Worker	**0065-H**	Based on Detects only	1E-02	9E-07		
		Site-related only	2E-02	2E-07		
Outdoor Worker	**0066-H**	Based on Detects only	3E-02	2E-06		none
		Site-related only	1E-02	2E-07		
Outdoor Worker	**0071-H**	Based on Detects only	9E-03	9E-07		
		Site-related only	2E-02	2E-07		
Outdoor Worker	**0076-H**	Based on Detects only	8E-03	9E-07		
		Site-related only	1E-02	2E-07		
Outdoor Worker	**0091-H**	Based on Detects only	1E-02	2E-06		
		Site-related only	2E-02	2E-07		
Outdoor Worker	**0098-H**	Based on Detects only	3E-02	2E-06		none
		Site-related only	1E-02	2E-07		
Outdoor Worker	**0102-H**	Based on Detects only	5E-03	1E-06		
		Site-related only	1E-02	2E-07		
Outdoor Worker	**0118-H**	Based on Detects only	7E-03	8E-07		
		Site-related only	1E-02	2E-07		
Outdoor Worker	**0121-H**	Based on Detects only	3E-02	2E-06		none
		Site-related only	1E-02	2E-07		
Outdoor Worker	**0122-H**	Based on Detects only	3E-02	1E-06		
		Site-related only	1E-02	2E-07		
Outdoor Worker	**0135-H**	Based on Detects only	8E-03	8E-07		
		Site-related only	1E-02	2E-07		
Outdoor Worker	**0139-H**	Based on Detects only	8E-03	8E-07		
		Site-related only	2E-02	2E-07		
Outdoor Worker	**0146-H**	Based on Detects only	8E-03	8E-07		
		Site-related only	1E-02	1E-07		
Outdoor Worker	**0148-H**	Based on Detects only	4E-02	2E-06		none
		Site-related only	1E-02	2E-07		
Outdoor Worker	**0153-H**	Based on Detects only	4E-02	2E-06		none
		Site-related only	1E-02	9E-08		
Outdoor Worker	**0162-H**	Based on Detects only	1E-02	9E-07		
		Site-related only	1E-02	2E-07		

Table H.4-14. Risk Summary for Outdoor Worker Exposures to Outdoor Air Based on Measured Outdoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{adult}	$Risk_{lifetime}$		
Outdoor Worker	**0173-H**	Based on Detects only	7E-03	8E-07		
		Site-related only	1E-02	2E-07		
Outdoor Worker	**0174-H**	Based on Detects only	7E-03	7E-07		
		Site-related only	1E-02	2E-07		
Outdoor Worker	**0302-H**	Based on Detects only	2E-02	1E-06		
		Site-related only	1E-02	2E-07		
Outdoor Worker	**0334-H**	Based on Detects only	4E-02	1E-06		
		Site-related only	2E-02	2E-07		
Outdoor Worker	**0381-H**	Based on Detects only	1E-02	9E-07		
		Site-related only	1E-02	1E-07		

See **Attachment H.8** for detailed risk estimates for each COPC.

Cancer risk is within the USEPA acceptable risk range between 1E-06 and 1E-04

Notes:

[a] Risk is presented based on detects only (i.e., includes only the detected COPCs) and for site-related COPCs only. The site-related COPCs include PCE, TCE, cis-1,2-DCE, vinyl chloride, and 1,4-dioxane. Risk for site-related COPCs includes both detects and non-detects.

[b] Chemicals are identified as drivers if the individual chemical-specific HQ is greater than 1 or risk is greater than 1E-06. The list of risk drivers is limited to only those chemicals that were detected in groundwater. Site-related risk drivers are shown in **bold**.

All ND = all COPCs were non-detect in all samples
cis-1,2-DCE = cis-1,2-Dichloroethene
COPC = chemicals of potential concern
HI = hazard index
HQ = hazard quotient
none = no individual chemicals had an non-cancer HQ greater than 1 or cancer risk greater than 1E-06
PCE = Tetrachloroethene
TCE = Trichloroethene

Table H.4-15. Risk Summary for Outdoor Air Exposures at VAMC Buildings 6 and 7 and Schools Based on Measured Outdoor Air Data (Maximum Concentrations)

700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	HI_{adult}	$Risk_{lifetime}$		
VAMC Campus Buildings							
Outdoor Worker	**Building 6**	Based on Detects only	---	5E-02	8E-07		
		Site-related only	---	8E-02	3E-07		
Outdoor Worker	**Building 7**	Based on Detects only	---	6E-03	3E-07		
		Site-related only	---	6E-02	4E-07		
Outdoor Worker	**Building 32**	Based on Detects only	---	2E-02	1E-06		
		Site-related only	---	1E-02	2E-07		
Schools							
Outdoor Worker [c]	**0045-S**	Based on Detects only	---	All ND	All ND		
		Site-related only	---	3E-02	1E-07		
Students	**0045-S**	Based on Detects only	All ND	All ND	All ND		
		Site-related only	3E-03	3E-03	7E-09		
Daycare children	**0045-S**	Based on Detects only	All ND	---	All ND		
		Site-related only	4E-03	---	6E-09		
Outdoor Worker [c]	**0365-S**	Based on Detects only	---	1E-02	9E-07		
		Site-related only	---	1E-02	2E-07		
Students	**0365-S**	Based on Detects only	1E-03	1E-03	4E-08		
		Site-related only	1E-03	1E-03	9E-09		
Daycare children	**0365-S**	Based on Detects only	2E-03	---	3E-08		
		Site-related only	2E-03	---	6E-09		

See **Attachment H.8** for detailed risk estimates for each COPC.

Notes:

[a] Risk is presented based on detects only (i.e., includes only the detected COPCs) and for site-related COPCs only. The site-related COPCs include PCE, TCE, cis-1,2-DCE, vinyl chloride, and 1,4-dioxane. Risk for site-related COPCs includes both detects and non-detects.

[b] Chemicals are identified as drivers if the individual chemical-specific HQ is greater than 1 or risk is greater than 1E-06. The list of risk drivers is limited to only those chemicals that were detected in groundwater. Site-related risk drivers are shown in **bold**.

[C] Includes teachers and maintenance workers

--- = the "child" receptor type is not applicable to an outdoor worker scenario

All ND = all COPCs were non-detect in all samples

cis-1,2-DCE = cis-1,2-Dichloroethene

COPC = chemicals of potential concern

HI = hazard index

HQ = hazard quotient

none = no individual chemicals had an non-cancer HQ greater than 1 or cancer risk greater than 1E-06

PCE = Tetrachloroethene

TCE = Trichloroethene

VAMC = Veterans Affairs Medical Center

Table H.5-1. Risk Summary for Residential Exposures to Indoor Air Stratified by Sampling/Analysis Method
Based on Measured Indoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

			Reasonable Maximum Exposure (RME)								
			HAPSITE			SUMMA			Passive		
Receptor	Property ID	Risk Grouping [a]	HI_{child}	HI_{adult}	$Risk_{lifetime}$	HI_{child}	HI_{adult}	$Risk_{lifetime}$	HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0001-H**	Risk for Detects only	1E-01	1E-01	5E-07	7E-01	7E-01	3E-05			
		Site-related only	2E-01	2E-01	1E-06	1E-01	1E-01	1E-06			
Residential	**0002-H**	Risk for Detects only	2E-02	2E-02	9E-08	5E-01	5E-01	1E-05			
		Site-related only	1E-01	1E-01	6E-07	2E-01	2E-01	1E-06			
Residential	**0003-H**	Risk for Detects only	8E-02	8E-02	3E-07	4E+00	4E+00	5E-04	5E-01	5E-01	3E-05
		Site-related only	1E-01	1E-01	4E-07	4E-01	4E-01	3E-06	3E-02	3E-02	1E-07
Residential	**0004-H**	Risk for Detects only	All ND	All ND	All ND	6E-02	6E-02	9E-06			
		Site-related only	1E-01	1E-01	6E-07	7E-02	7E-02	7E-07			
Residential	**0008-H**	Risk for Detects only				3E+00	3E+00	1E-04			
		Site-related only				3E-01	3E-01	2E-06			
Residential	**0011-H**	Risk for Detects only	All ND	All ND	All ND	7E-01	7E-01	1E-05	5E-01	5E-01	6E-06
		Site-related only	3E-02	3E-02	1E-07	5E-01	5E-01	3E-06	4E-01	4E-01	2E-06
Residential	**0012-H**	Risk for Detects only	6E-02	6E-02	2E-07	2E-01	2E-01	2E-05			
		Site-related only	2E-01	2E-01	8E-07	1E-01	1E-01	9E-07			
Residential	**0013-H**	Risk for Detects only	All ND	All ND	All ND	5E-02	5E-02	2E-06			
		Site-related only	1E-01	1E-01	6E-07	7E-02	7E-02	7E-07			
Residential	**0017-H**	Risk for Detects only				6E-01	6E-01	2E-05			
		Site-related only				4E-01	4E-01	2E-06			
Residential	**0018-H**	Risk for Detects only	8E-02	8E-02	3E-07	5E+00	5E+00	1E-04	4E+00	4E+00	1E-04
		Site-related only	1E-01	1E-01	4E-07	7E-01	7E-01	4E-06	5E-01	5E-01	2E-06
Residential	**0023-H**	Risk for Detects only				1E-01	1E-01	4E-06			
		Site-related only				1E-01	1E-01	9E-07			
Residential	**0025-H**	Risk for Detects only	All ND	All ND	All ND	2E-01	2E-01	3E-05	1E-01	1E-01	2E-05
		Site-related only	1E-01	1E-01	6E-07	2E-01	2E-01	5E-06	1E-02	1E-02	5E-08
Residential	**0026-H**	Risk for Detects only	3E-02	3E-02	1E-07	5E+00	5E+00	7E-05	6E-01	6E-01	3E-05
		Site-related only	2E-01	2E-01	6E-07	4E-01	4E-01	2E-06	3E-01	3E-01	1E-06
Residential	**0027-H**	Risk for Detects only	All ND	All ND	All ND	5E-01	5E-01	4E-05			
		Site-related only	1E-01	1E-01	6E-07	7E-02	7E-02	7E-07			
Residential	**0029-H**	Risk for Detects only	2E-01	2E-01	6E-07	2E-01	2E-01	1E-05			
		Site-related only	3E-01	3E-01	1E-06	1E-01	1E-01	9E-07			
Residential	**0030-H**	Risk for Detects only				5E-01	5E-01	1E-05			
		Site-related only				3E-01	3E-01	2E-06			
Residential	**0036-H**	Risk for Detects only				2E-01	2E-01	1E-05			
		Site-related only				3E-01	3E-01	2E-06			
Residential	**0037-H**	Risk for Detects only	8E-02	8E-02	3E-07	2E+00	2E+00	1E-04	4E-01	4E-01	1E-05
		Site-related only	1E-01	1E-01	4E-07	3E-01	3E-01	4E-06	3E-01	3E-01	1E-06
Residential	**0038-H**	Risk for Detects only	All ND	All ND	All ND	5E-02	5E-02	1E-05			
		Site-related only	1E-01	1E-01	6E-07	7E-02	7E-02	7E-07			
Residential	**0040-H**	Risk for Detects only	1E+01	1E+01	4E-05	6E+00	6E+00	1E-04			
		Site-related only	1E+01	1E+01	4E-05	5E+00	5E+00	2E-05			
Residential	**0041-H**	Risk for Detects only	1E-01	1E-01	4E-07						
		Site-related only	2E-01	2E-01	9E-07						
Residential	**0047-H**	Risk for Detects only	2E-01	2E-01	8E-07						
		Site-related only	3E-01	3E-01	1E-06						
Residential	**0050-H**	Risk for Detects only	All ND	All ND	All ND						
		Site-related only	1E-01	1E-01	6E-07						
Residential	**0051-H [b]**	Risk for Detects only	1E+01	1E+01	4E-05	3E+00	3E+00	3E-05	2E-01	2E-01	1E-05
		Site-related only	1E+01	1E+01	4E-05	1E-01	1E-01	1E-06	7E-02	7E-02	3E-07
Residential	**0052-H**	Risk for Detects only	5E-02	5E-02	2E-07						
		Site-related only	2E-01	2E-01	7E-07						
Residential	**0053-H**	Risk for Detects only	6E-01	6E-01	2E-06	8E-01	8E-01	2E-05	4E-01	4E-01	7E-06
		Site-related only	7E-01	7E-01	3E-06	6E-01	6E-01	3E-06	3E-01	3E-01	1E-06
Residential	**0054-H**	Risk for Detects only	5E+00	5E+00	2E-05						
		Site-related only	5E+00	5E+00	2E-05						
Residential	**0055-H**	Risk for Detects only	4E-02	4E-02	1E-07						
		Site-related only	2E-01	2E-01	7E-07						
Residential	**0056-H**	Risk for Detects only	2E-01	2E-01	6E-07						
		Site-related only	3E-01	3E-01	1E-06						
Residential	**0057-H**	Risk for Detects only	All ND	All ND	All ND						
		Site-related only	1E-01	1E-01	6E-07						
Residential	**0058-H**	Risk for Detects only	All ND	All ND	All ND						
		Site-related only	1E-01	1E-01	6E-07						
Residential	**0059-H [c]**	Risk for Detects only	1E+01	1E+01	5E-05	3E+00	3E+00	8E-05	2E-01	2E-01	7E-06
		Site-related only	1E+01	1E+01	5E-05	2E-01	2E-01	9E-06	2E-02	2E-02	7E-08
Residential	**0060-H**	Risk for Detects only	All ND	All ND	All ND						
		Site-related only	1E-01	1E-01	6E-07						
Residential	**0061-H**	Risk for Detects only	All ND	All ND	All ND						
		Site-related only	1E-01	1E-01	6E-07						

Table H.5-1. Risk Summary for Residential Exposures to Indoor Air Stratified by Sampling/Analysis Method
Based on Measured Indoor Air Data (Maximum Concentrations)
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

			Reasonable Maximum Exposure (RME)								
			HAPSITE			SUMMA			Passive		
Receptor	Property ID	Risk Grouping [a]	HI_{child}	HI_{adult}	$Risk_{lifetime}$	HI_{child}	HI_{adult}	$Risk_{lifetime}$	HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0062-H**	Risk for Detects only	All ND	All ND	All ND						
		Site-related only	1E-01	1E-01	6E-07						
Residential	**0063-H**	Risk for Detects only	1E-01	1E-01	4E-07						
		Site-related only	2E-01	2E-01	9E-07						
Residential	**0064-H**	Risk for Detects only	6E-02	6E-02	2E-07	2E-01	2E-01	3E-06			
		Site-related only	2E-01	2E-01	8E-07	1E-01	1E-01	9E-07			
Residential	**0065-H**	Risk for Detects only	All ND	All ND	All ND	1E-01	1E-01	1E-05	1E-01	1E-01	7E-06
		Site-related only	3E-02	3E-02	1E-07	5E-02	5E-02	7E-07	7E-03	7E-03	3E-08
Residential	**0066-H**	Risk for Detects only	All ND	All ND	All ND	3E-01	3E-01	1E-05	3E-01	3E-01	1E-05
		Site-related only	3E-02	3E-02	1E-07	8E-02	8E-02	1E-06	9E-02	9E-02	4E-07
Residential	**0069-H**	Risk for Detects only	All ND	All ND	All ND	4E-01	4E-01	2E-05	1E-01	1E-01	1E-05
		Site-related only	3E-02	3E-02	1E-07	8E-02	8E-02	9E-07	8E-03	8E-03	3E-08
Residential	**0071-H**	Risk for Detects only	All ND	All ND	All ND	2E-01	2E-01	2E-05	5E-01	5E-01	1E-05
		Site-related only	3E-02	3E-02	1E-07	2E-02	2E-02	2E-07	1E-02	1E-02	4E-08
Residential	**0076-H**	Risk for Detects only	All ND	All ND	All ND	3E-01	3E-01	2E-05	3E-01	3E-01	1E-05
		Site-related only	3E-02	3E-02	1E-07	2E-02	2E-02	5E-07	7E-03	7E-03	3E-08
Residential	**0091-H**	Risk for Detects only	4E-01	4E-01	2E-06	1E+00	1E+00	5E-05	8E-01	8E-01	3E-05
		Site-related only	4E-01	4E-01	2E-06	6E-01	6E-01	3E-06	6E-01	6E-01	2E-06
Residential	**0098-H**	Risk for Detects only	All ND	All ND	All ND	7E-01	7E-01	2E-05	4E-01	4E-01	3E-05
		Site-related only	3E-02	3E-02	1E-07	4E-01	4E-01	2E-06	2E-02	2E-02	1E-07
Residential	**0102-H**	Risk for Detects only				3E-01	3E-01	9E-06			
		Site-related only				1E-02	1E-02	7E-07			
Residential	**0118-H**	Risk for Detects only	All ND	All ND	All ND	1E+00	1E+00	2E-05	3E-01	3E-01	2E-05
		Site-related only	3E-02	3E-02	1E-07	2E-01	2E-01	1E-06	1E-01	1E-01	5E-07
Residential	**0121-H**	Risk for Detects only	All ND	All ND	All ND	5E-01	5E-01	2E-05	2E-01	2E-01	1E-05
		Site-related only	3E-02	3E-02	1E-07	1E-01	1E-01	1E-06	1E-01	1E-01	4E-07
Residential	**0122-H**	Risk for Detects only	All ND	All ND	All ND	4E-01	4E-01	1E-05	2E-01	2E-01	9E-06
		Site-related only	3E-02	3E-02	1E-07	1E-01	1E-01	8E-07	1E-01	1E-01	4E-07
Residential	**0133-H**	Risk for Detects only	All ND	All ND	All ND	3E-01	3E-01	6E-05	2E-01	2E-01	2E-05
		Site-related only	3E-02	3E-02	1E-07	3E-02	3E-02	4E-07	2E-02	2E-02	8E-08
Residential	**0135-H**	Risk for Detects only	All ND	All ND	All ND	7E-01	7E-01	3E-05	8E-01	8E-01	3E-05
		Site-related only	3E-02	3E-02	1E-07	4E-02	4E-02	4E-07	1E-02	1E-02	6E-08
Residential	**0137-H**	Risk for Detects only	All ND	All ND	All ND	4E-01	4E-01	3E-05	2E-01	2E-01	1E-05
		Site-related only	3E-02	3E-02	1E-07	1E-01	1E-01	8E-07	2E-02	2E-02	9E-08
Residential	**0139-H**	Risk for Detects only	All ND	All ND	All ND	3E+00	3E+00	3E-04	3E-01	3E-01	1E-04
		Site-related only	3E-02	3E-02	1E-07	3E-02	3E-02	5E-07	9E-03	9E-03	4E-08
Residential	**0146-H**	Risk for Detects only	All ND	All ND	All ND	7E-01	7E-01	2E-05	2E-01	2E-01	1E-05
		Site-related only	3E-02	3E-02	1E-07	3E-01	3E-01	1E-06	9E-02	9E-02	3E-07
Residential	**0148-H**	Risk for Detects only	All ND	All ND	All ND	5E-01	5E-01	2E-05	2E-01	2E-01	1E-05
		Site-related only	3E-02	3E-02	1E-07	7E-02	7E-02	6E-07	4E-02	4E-02	2E-07
Residential	**0153-H**	Risk for Detects only	All ND	All ND	All ND	4E-01	4E-01	1E-05	2E-01	2E-01	1E-05
		Site-related only	3E-02	3E-02	1E-07	4E-02	4E-02	5E-07	2E-02	2E-02	6E-08
Residential	**0162-H**	Risk for Detects only	All ND	All ND	All ND	4E-01	4E-01	2E-05	2E-01	2E-01	1E-05
		Site-related only	3E-02	3E-02	1E-07	3E-02	3E-02	5E-07	2E-02	2E-02	9E-08
Residential	**0166-H**	Risk for Detects only	3E-03	3E-03	1E-08	3E+00	3E+00	2E-05	7E-01	7E-01	1E-05
		Site-related only	3E-02	3E-02	1E-07	6E-01	6E-01	3E-06	4E-01	4E-01	2E-06
Residential	**0173-H**	Risk for Detects only	All ND	All ND	All ND	4E-01	4E-01	2E-05	3E-01	3E-01	2E-05
		Site-related only	3E-02	3E-02	1E-07	2E-01	2E-01	1E-06	1E-01	1E-01	5E-07
Residential	**0174-H**	Risk for Detects only	All ND	All ND	All ND	6E-01	6E-01	8E-05	4E-01	4E-01	3E-05
		Site-related only	3E-02	3E-02	1E-07	7E-02	7E-02	2E-06	3E-02	3E-02	1E-07

See **Attachment H.6** for detailed risk estimates for each COPC.

Cancer risk is within the USEPA acceptable risk range between 1E-06 and 1E-04
Non-cancer HI is greater than 1 or cancer risk is greater than 1E-04

Notes:
[a] Risk is presented based on detects only (i.e., includes only the detected COPCs) and for site-related COPCs only. The site-related COPCs include PCE, TCE, cis-1,2-DCE, vinyl chloride, and 1,4-dioxane. Risk for site-related COPCs includes both detects and non-detects.
[b] For property 0051-H, interim measures were taken (i.e., basement cracks were sealed); HAPSITE risk estimates are based on pre-mitigation conditions. SUMMA and passive data represent post-mitigation conditions.
[c] For property 0059-H, HAPSITE risks are being driven by one historical sample collected within inches of a floor drain. The SUMMA and passive samples are more representative of breathing zone.

All ND = all COPCs were non-detect in all samples
cis-1,2-DCE = cis-1,2-Dichloroethene
COPC = chemicals of potential concern
HI = hazard index
HQ = hazard quotient
none = no individual chemicals had an non-cancer HQ greater than 1 or cancer risk greater than 1E-06
PCE = Tetrachloroethene
TCE = Trichloroethene

Table H.5-2. Common Household Sources of Background VOCs
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Indoor Air COPC	Common Household Sources of Background Indoor Air Contamination
1,3-BUTADIENE	automobile exhaust and residential wood combustion
1,4-DIOXANE	household detergents, such as shampoos, liquid hand soap, and laundry detergent [a]
1,1,2,2-TETRACHLOROETHANE	solvent, paint and rust removers, varnishes and lacquers
1,2,4-TRIMETHYLBENZENE	gasoline and automobile exhaust
1,2-DICHLOROETHANE	polyresin molded decorations (particularly from China)
1,3,5-TRIMETHYLBENZENE	gasoline and automobile exhaust
1,4-DICHLOROBENZENE	moth balls, general insecticide in farming, air deodorant and toilet disinfectant
BENZENE	automobile exhaust, gasoline, cigarette smoke, scented candles, scatter rugs and carpet glue
BROMOMETHANE	soil or space fumigant
CHLOROFORM	generated from chlorinated water (showers)
ETHYLBENZENE	paint, paint thinners, insecticides, wood office furniture, scented candles and gasoline
ISOPROPYL ALCOHOL	alcohol-based hand sanitizers [b]
XYLENES	water sealer, gasoline, automobile exhaust, markers, paint, floor polish and cigarette smoke
METHYLENE CHLORIDE	hairspray, paint stripper, rug cleaners, insecticides and furniture polish
NAPHTHALENE	cigarette smoke, automobile exhaust, residential wood combustion, insecticides and moth balls
TETRACHLOROETHENE	dry cleaning, metal degreasing, adhesives and glues, insecticides, scented candles and rug cleaner
TRICHLOROETHENE	glues, adhesives, paint removers, spot removers, rug cleaning fluids, paints, metal cleaners, typewriter correction fluid, and automotive cleaning and degreasing products

Sources:

Unless noted otherwise, *NJDEP Vapor Intrusion Techical Guidance, Version 5.0* (NJDEP 2013)

[a] *Toxicological Profile for 1,4-Dioxane* . https://www.atsdr.cdc.gov/ToxProfiles/tp187-c5.pdf

[b] https://www.fda.gov/drugs/information-drug-class/qa-consumers-hand-sanitizers-and-covid-19

Table H.5-3. Indoor Air Background Levels of VOCs Compared to Site Concentrations
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Indoor Air COPCs	CAS Number	EPA (2011) Indoor Air Background Concentrations					Site Indoor Air Concentrations	
		No. Studies	No. Samples	Detection Frequency (%)	Range of 50th Percentiles (µg/m^3)	Range of 95th Percentiles (µg/m^3)	Min Conc. (µg/m^3)	Max Conc. (µg/m^3)
1,2-DICHLOROETHANE	107-06-2	7	1,432	13.8%	<RL	<RL - 0.2	0.027	7.0
BENZENE	71-43-2	14	2,615	91.1%	<RL - 4.7	9.9 - 29	0.15	35
CARBON TETRACHLORIDE	56-23-5	6	1,248	53.5%	<RL - 0.68	<RL - 1.1	0.2	1.5
CHLOROFORM	67-66-3	11	2,278	68.5%	<RL - 2.4	4.1 - 7.5	0.072	47
CIS-1,2-DICHLOROETHENE*	**156-59-2**	**3**	**875**	**4.9%**	**<RL**	**<RL - 1.2**	**0.034**	**11**
ETHYLBENZENE	100-41-4	10	1,484	85.7%	1 - 3.7	12 - 17	0.056	27
M,P-XYLENE	108-38-3	10	1,920	92.9%	1.5 - 14	21 - 63.5	0.19	122
METHYLENE CHLORIDE	75-09-2	8	1,724	79.1%	0.68 - 61	2.9 - 45	0.29	500
O-XYLENE	95-47-6	12	2,004	89.0%	1.1 - 3.6	13 - 20	0.061	40
TETRACHLOROETHENE	**127-18-4**	**13**	**2,312**	**62.5%**	**<RL - 2.2**	**4.1 - 9.5**	**0.043**	**9,358**
TRICHLOROETHENE	**79-01-6**	**12**	**2,503**	**42.6%**	**<RL - 1.1**	**0.56 - 3.3**	**0.018**	**1,441**
VINYL CHLORIDE	**75-01-4**	**4**	**1,484**	**9.2%**	**<RL**	**<RL - 0.09**	**0.013**	**0.53**

Source: *Background Indoor Air Concentrations of Volatile Organic Compounds in North American Residences (1990–2005): A Compilation of Statistics for Assessing Vapor Intrusion* (EPA 2011)

The site-related COPCs are indicated in **bold** text.

*cis-1,2-dichloroethene was not identified as an indoor air COPC because there was no screening level, but has been retained in this table because it is a site-related contaminant.

µg/m^3 = micrograms per cubic meter of air

<RL = less than reporting limit

Table H.6-1
Overall Human Health Risk Assessment Conclusions for Site-related COPCs
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Exposure Medium	Risk Conclusion
Resident	Potable Water	Potential unacceptable risk (future)
	Indoor Air	Potential unacceptable risk (within ESS area)
	Outdoor Ambient Air	Within EPA's acceptable risk range
	Shallow Groundwater	Risks are negligible
	Deep Groundwater as Irrigation Water	Assumed to be minor
	Spring/Seep Surface Water	Risks are negligible
	Spring/Seep Sediment	No COPCs identified; risks are negligible
	Homegrown Produce	PCE risks are negligible
	Shallow Soil	No COPCs identified; risks are negligible
Students	Potable Water	Assumed potential unacceptable risk (future; based on residential)
	Indoor Air	Within EPA's acceptable risk range
	Outdoor Ambient Air	Within EPA's acceptable risk range
	Spring/Seep Surface Water	Risks are negligible
	Spring/Seep Sediment	No COPCs identified; risks are negligible
	Shallow Soil	No COPCs identified; risks are negligible
Daycare Children	Potable Water	Assumed potential unacceptable risk (future; based on residential)
	Indoor Air	Potential unacceptable risk (future home daycares within ESS area)
	Outdoor Ambient Air	Within EPA's acceptable risk range
	Spring/Seep Surface Water	Risks are negligible
	Spring/Seep Sediment	No COPCs identified; risks are negligible
	Shallow Soil	No COPCs identified; risks are negligible
Indoor Worker	Potable Water	Assumed potential unacceptable risk (future; based on residential)
	Indoor Air	Potential unacceptable risk (within ESS area)
Outdoor Worker	Outdoor Ambient Air	Within EPA's acceptable risk range
	Shallow Groundwater	Risks are negligible
	Deep Groundwater as Irrigation Water	Assumed to be minor
	Spring/Seep Surface Water	Risks are negligible
	Spring/Seep Sediment	No COPCs identified; risks are negligible
	Shallow Soil	No COPCs identified; risks are negligible
Construction Worker	Outdoor Ambient Air	Assumed to be minor (given no unacceptable risk based on outdoor worker)
	Shallow Groundwater	Within EPA's acceptable risk range
	Trench Air	Within EPA's acceptable risk range
	Spring/Seep Surface Water	Risks are negligible
	Spring/Seep Sediment	No COPCs identified; risks are negligible
	Shallow Soil	No COPCs identified; risks are negligible

Notes:
Only pathways considered to be potentially complete in Figure H.2-1 are presented.
Pathways with potential unacceptable risk are shaded in orange.

COPC = chemicals of potential concern
EPA = U.S. Environmental Protection Agency
ESS area = East Side Springs area

Appendix H – Final
Human Health Risk Assessment
[Volume 2 – Attachments]

700 South 1600 East PCE Plume Site
Salt Lake City, Utah

CONTRACT NO.: W912DQ-18-D-3008
TASK ORDER: W912DQ19F3048

U.S. Army Corps of Engineers
Kansas City District

Department of Veterans Affairs
Veterans Health Administration Salt Lake City
Health Care System

September 19,
2022

CDM Smith

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Attachments

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Attachment H.1

Medium-Specific Screening Levels

ATTACHMENT H.1-1
GROUNDWATER SCREENING LEVELS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Notes	EPA Tap Water RSL (ug/L)	Utah DEQ Screening Levels (ug/L)	EPA Ground-water VISL (ug/L)	Selected SL (ug/L)
1,1,1-TRICHLOROETHANE	71-55-6		800	--	742	742
1,1,2,2-TETRACHLOROETHANE	79-34-5		0.076	--	3.2	0.076
1,1,2-TRICHLOROETHANE	79-00-5		0.041	--	0.619	0.041
1,1,2-TRICHLOROTRIFLUOROETHANE	76-13-1		1000	--	24	24.2
1,1'-BIPHENYL	92-52-4		0.083	--	3.3	0.083
1,1-DICHLOROETHANE	75-34-3		2.8	--	7.6	2.8
1,1-DICHLOROETHENE	75-35-4		28	--	20	19.5
1,2,3-TRICHLOROBENZENE	87-61-6		0.7	--	-	0.7
1,2,4,5-TETRACHLOROBENZENE	95-94-3		0.017	--	-	0.017
1,2,4-TRICHLOROBENZENE	120-82-1		0.4	--	3.6	0.4
1,2,4-TRIMETHYLBENZENE	95-63-6		5.6	--	25	5.6
1,2-DIBROMO-3-CHLOROPROPANE	96-12-8		0.00033	--	0.028	0.00033
1,2-DIBROMOETHANE	106-93-4		0.0075	--	0.18	0.0075
1,2-DICHLOROBENZENE	95-50-1		30	--	266	30
1,2-DICHLOROETHANE	107-06-2		0.17	--	2.2	0.17
1,2-DICHLOROPROPANE	78-87-5		0.82	--	3.6	0.82
1,3,5-TRIMETHYLBENZENE	108-67-8		6	--	18	6
1,3-DICHLOROBENZENE	541-73-1		NA	--	-	NA
1,3-DICHLOROPROPYLENE	542-75-6		0.47	--	4.8	0.47
1,4-DICHLOROBENZENE	106-46-7		0.48	--	2.6	0.48
1,4-DIOXANE	123-91-1		0.46	--	2860	0.46
2,3,4,6-TETRACHLOROPHENOL	58-90-2		24	--	-	24
2,4,5-TRICHLOROPHENOL	95-95-4		120	--	-	120
2,4,6-TRICHLOROPHENOL	88-06-2		1.2	--	-	1.2
2,4-DICHLOROPHENOL	120-83-2		4.6	--	-	4.6
2,4-DIMETHYLPHENOL	105-67-9		36	--	-	36
2,4-DINITROPHENOL	51-28-5		3.9	--	-	3.9
2,4-DINITROTOLUENE	121-14-2		0.24	--	-	0.24
2,6-DINITROTOLUENE	606-20-2		0.049	--	-	0.049
2-BUTANONE (MEK)	78-93-3		560	--	224000	560
2-CHLORONAPHTHALENE	91-58-7		75	--	-	75
2-CHLOROPHENOL	95-57-8		9.1	--	-	9.1
2-HEXANONE	591-78-6		3.8	--	821	3.8
2-METHYLNAPHTHALENE	91-57-6		3.6	--	-	3.6
2-METHYLPHENOL	95-48-7		93	--	-	93
2-NITROANILINE	88-74-4		19	--	-	19
2-NITROPHENOL	88-75-5		NA	--	-	NA
3,3'-DICHLOROBENZIDINE	91-94-1		0.13	--	-	0.13
3-NITROANILINE	99-09-2		NA	--	-	NA

ATTACHMENT H.1-1
GROUNDWATER SCREENING LEVELS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Notes	EPA Tap Water RSL (ug/L)	Utah DEQ Screening Levels (ug/L)	EPA Ground-water VISL (ug/L)	Selected SL (ug/L)
4,4'-DDD	72-54-8		0.0063	--	-	0.0063
4,4'-DDE	72-55-9		0.046	--	17	0.046
4,4'-DDT	50-29-3		0.23	--	-	0.23
4,6-DINITRO-2-METHYLPHENOL	534-52-1		0.15	--	-	0.15
4-BROMOPHENYL PHENYL ETHER	101-55-3		NA	--	NA	NA
4-CHLORO-3-METHYLPHENOL	59-50-7		140	--	-	140
4-CHLOROANILINE	106-47-8		0.37	--	-	0.37
4-CHLOROPHENYL PHENYL ETHER	7005-72-3		NA	--	NA	NA
4-METHYL-2-PENTANONE (MIBK)	108-10-1		630	--	55500	630
4-METHYLPHENOL	106-44-5		37	--	-	37
4-NITROANILINE	100-01-6		3.8	--	-	3.8
4-NITROPHENOL	100-02-7		NA	--	NA	NA
ACENAPHTHENE	83-32-9		53	--	-	53
ACENAPHTHYLENE	208-96-8		NA	--	NA	NA
ACETONE	67-64-1		1800	--	-	1800
ACETOPHENONE	98-86-2		190	--	-	190
ALDRIN	309-00-2		0.00092	--	0.32	0.00092
ALKALINITY	ALKALINITY		NA	--	NA	NA
ALKALINITY, TOTAL (AS CACO3)	ALK		NA	--	NA	NA
ALPHA-BHC	319-84-6		0.0072	--	-	0.0072
ALUMINUM	7429-90-5		2000	--	-	2000
ANTHRACENE	120-12-7		180	--	-	180
ANTIMONY	7440-36-0		0.78	--	-	0.78
ARSENIC	7440-38-2		0.052	--	-	0.052
ATRAZINE	1912-24-9		0.3	--	-	0.3
BARIUM	7440-39-3		380	--	-	380
BENZALDEHYDE	100-52-7		19	--	-	19
BENZENE	71-43-2		0.46	5	1.6	0.46
BENZO(A)ANTHRACENE	56-55-3		0.030	--	34	0.03
BENZO(A)PYRENE	50-32-8		0.025	--	-	0.025
BENZO(B)FLUORANTHENE	205-99-2		0.25	--	-	0.25
BENZO(G,H,I)PERYLENE	191-24-2		NA	--	NA	NA
BENZO(K)FLUORANTHENE	207-08-9		2.5	--	-	2.5
BENZYL BUTYL PHTHALATE	85-68-7		16	--	-	16
BERYLLIUM	7440-41-7		2.5	--	-	2.5
BETA-BHC	319-85-7		0.025	--	-	0.025
BIS(2-CHLOROETHOXY)METHANE	111-91-1		5.9	--	-	5.9
BIS(2-CHLOROETHYL) ETHER	111-44-4		0.014	--	12	0.014
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7		5.6	--	-	5.6

ATTACHMENT H.1-1
GROUNDWATER SCREENING LEVELS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Notes	EPA Tap Water RSL (ug/L)	Utah DEQ Screening Levels (ug/L)	EPA Ground-water VISL (ug/L)	Selected SL (ug/L)
BIS-CHLOROISOPROPYL ETHER	39638-32-9		NA	--	-	NA
BROMOCHLOROMETHANE	74-97-5		8.3	--	70	8.3
BROMODICHLOROMETHANE	75-27-4		0.13	--	0.88	0.13
BROMOFORM	75-25-2		3.3	--	117	3.3
BROMOMETHANE	74-83-9		0.75	--	1.7	0.75
CADMIUM	7440-43-9_water		0.18	--	NA	0.18
CALCIUM	7440-70-2		NA	--	NA	NA
CAPROLACTAM	105-60-2		990	--	-	990
CARBAZOLE	86-74-8		NA	--	NA	NA
CARBON DISULFIDE	75-15-0		81	--	124	81
CARBON TETRACHLORIDE	56-23-5		0.46	--	0.42	0.415
CHLORIDE	16887-00-6		NA	--	NA	NA
CHLOROBENZENE	108-90-7		7.8	--	41	7.8
CHLOROETHANE	75-00-3		830	--	919	830
CHLOROFORM	67-66-3		0.22	--	0.81	0.22
CHLOROMETHANE	74-87-3		19	--	26	19
CHROMIUM	16065-83-1	1	2200	--	-	2200
CHRYSENE	218-01-9		25	--	-	25
CIS-1,2-DICHLOROETHENE	156-59-2		3.6	--	-	3.6
CIS-1,3-DICHLOROPROPENE	542-75-6	3	0.47	--	4.8	0.47
CIS-CHLORDANE	5103-71-9		0.36	--	-	0.36
COBALT	7440-48-4		0.6	--	-	0.6
COPPER	7440-50-8		80	--	-	80
CYCLOHEXANE	110-82-7		1300	--	102	102
DELTA-BHC	319-86-8		NA	--	NA	NA
DIBENZO(A,H)ANTHRACENE	53-70-3		0.025	--	-	0.025
DIBENZOFURAN	132-64-9		0.79	--	-	0.79
DIBROMOCHLOROMETHANE	124-48-1		0.87	--	-	0.87
DICHLORODIFLUOROMETHANE	75-71-8		20	--	0.74	0.744
DIELDRIN	60-57-1		0.0018	--	-	0.0018
DIETHYL PHTHALATE	84-66-2		1500	--	-	1500
DIMETHYL PHTHALATE	131-11-3		NA	--	-	NA
DI-N-BUTYLPHTHALATE	84-74-2		90	--	-	90
DI-N-OCTYLPHTHALATE	117-84-0		20	--	-	20
DISSOLVED OXYGEN	DISS_OXYGEN		NA	--	NA	NA
ENDOSULFAN I	115-29-7	4	10	--	-	10
ENDOSULFAN II	115-29-7	4	10	--	-	10
ENDOSULFAN SULFATE	1031-07-8		11	--	-	11
ENDRIN	72-20-8		0.23	--	-	0.23

ATTACHMENT H.1-1
GROUNDWATER SCREENING LEVELS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Notes	EPA Tap Water RSL (ug/L)	Utah DEQ Screening Levels (ug/L)	EPA Ground-water VISL (ug/L)	Selected SL (ug/L)
ENDRIN ALDEHYDE	7421-93-4		NA	--	NA	NA
ENDRIN KETONE	53494-70-5		NA	--	NA	NA
ETHANE	74-84-0		NA	--	NA	NA
ETHENE	74-85-1		NA	--	NA	NA
ETHYLBENZENE	100-41-4		1.5	700	3.5	1.5
FERROUS IRON	FE(FS)		NA	--	NA	NA
FLUORANTHENE	206-44-0		80	--	-	80
FLUORENE	86-73-7		29	--	-	29
GAMMA-BHC (LINDANE)	58-89-9		0.012	--	-	0.012
HEPTACHLOR	76-44-8		0.0014	--	0.18	0.0014
HEPTACHLOR EPOXIDE	1024-57-3		0.0014	--	1.3	0.0014
HEXACHLORO-1,3-BUTADIENE	87-68-3		0.14	--	0.30	0.14
HEXACHLOROBENZENE	118-74-1		0.0098	--	0.088	0.0098
HEXACHLOROCYCLOPENTADIENE	77-47-4		0.041	--	0.019	0.0189
HEXACHLOROETHANE	67-72-1		0.33	--	1.6	0.33
INDENO(1,2,3-CD)PYRENE	193-39-5		0.25	--	-	0.25
IRON	7439-89-6		1400	--	-	1400
ISOPHORONE	78-59-1		78	--	-	78
ISOPROPYLBENZENE	98-82-8		45	--	89	45
LEAD	7439-92-1		15	--	NA	15
M,P-XYLENE	108-38-3		19	--	36	19
MAGNESIUM	7439-95-4		NA	--	NA	NA
MANGANESE	7439-96-5_non-diet		43	--	NA	43
MERCURY	7487-94-7	2	0.57	--	-	0.57
METHANE	74-82-8		NA	--	NA	NA
METHOXYCHLOR	72-43-5		3.7	--	-	3.7
METHYL ACETATE	79-20-9		2000	--	-	2000
METHYL TERT-BUTYL ETHER	1634-04-4		14	200	450	14
METHYLCYLOHEXANE	108-87-2		NA	--	NA	NA
METHYLENE CHLORIDE	75-09-2		11	--	471	11
NAPHTHALENE	91-20-3		0.12	--	4.6	0.12
NICKEL	7440-02-0		39	--	-	39
NITRATE [AS N]	14797-55-8		3200	--	-	3200
NITRATE/NITRITE	Nitrate/Nitrite		NA	--	NA	NA
NITRATE/NITRITE [AS N]	N		NA	--	NA	NA
NITRATE-NITRITE (AS N)	N		NA	--	NA	NA
NITROBENZENE	98-95-3		0.14	--	72	0.14
N-NITROSO-DI-N-PROPYLAMINE	621-64-7		0.011	--	-	0.011
N-NITROSODIPHENYLAMINE	86-30-6		12	--	-	12

ATTACHMENT H.1-1
GROUNDWATER SCREENING LEVELS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Notes	EPA Tap Water RSL (ug/L)	Utah DEQ Screening Levels (ug/L)	EPA Ground-water VISL (ug/L)	Selected SL (ug/L)
OXIDATION-REDUCTION POTENTIAL	ORP		NA	--	NA	NA
O-XYLENE	95-47-6		19	10000	49	19
PENTACHLOROPHENOL	87-86-5		0.041	--	-	0.041
PH	pH		NA	--	NA	NA
PHENANTHRENE	85-01-8		NA	--	NA	NA
PHENOL	108-95-2		580	--	-	580
POTASSIUM	7440-09-7		NA	--	NA	NA
PYRENE	129-00-0		12	--	-	12
RATIO OF STABLE ISOTOPES HYDROGEN-2	NA		NA	--	-	NA
RATIO OF STABLE ISOTOPES OXYGEN-18 A	NA		NA	--	-	NA
SELENIUM	7782-49-2		10	--	-	10
SILVER	7440-22-4		9.4	--	-	9.4
SODIUM	7440-23-5		NA	--	NA	NA
SPECIFIC CONDUCTANCE	SC		NA	--	NA	NA
STYRENE	100-42-5		120	--	928	120
SULFATE	14808-79-8		NA	--	NA	NA
TEMPERATURE	TEMP		NA	--	NA	NA
TETRACHLOROETHENE	127-18-4		4.1	--	5.8	4.1
THALLIUM	7440-28-0		0.02	--	-	0.02
TOLUENE	108-88-3		110	1000	1920	110
TOTAL DISSOLVED SOLIDS	TDS		NA	--	NA	NA
TOTAL ORGANIC CARBON	TOC		NA	--	NA	NA
TOXAPHENE	8001-35-2		0.071	--	-	0.071
TRANS-1,2-DICHLOROETHENE	156-60-5		6.8	--	11	6.8
TRANS-1,3-DICHLOROPROPENE	542-75-6	3	0.47	--	4.8	0.47
TRANS-CHLORDANE	5103-74-2		1.0	--	-	1
TRICHLOROETHENE	79-01-6		0.28	--	0.52	0.28
TRICHLOROFLUOROMETHANE	75-69-4		520	--	-	520
TURBIDITY	TURB		NA	--	NA	NA
VANADIUM	7440-62-2		8.6	--	-	8.6
VINYL ACETATE	108-05-4		41	--	998	41
VINYL CHLORIDE	75-01-4		0.019	--	0.15	0.019
VOLATILE ORGANICS	VC		NA	--	NA	NA
ZINC	7440-66-6		600	--	-	600

Sources:

Utah Department of Environmental Quality. 2006. Initial Screening Levels.
https://documents.deq.utah.gov/environmental-response-and-remediation/ust-lust/branch/initial-screening-levels.pdf
USEPA. Default Residential Tap Water Regional Screening Levels (RSLs). May 2022 version.
USEPA. Default Residential Groundwater Vapor Intrusion Screening Levels (VISLs). May 2022 version.

ATTACHMENT H.1-1
GROUNDWATER SCREENING LEVELS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Notes	EPA Tap Water RSL (ug/L)	Utah DEQ Screening Levels (ug/L)	EPA Ground-water VISL (ug/L)	Selected SL (ug/L)

Notes:

Screening levels based upon a target hazard quotient of 0.1 and a target cancer risk of 1E-06.

1 - as Chromium III

2 - as mercuric chloride

3 - the CASRN for cis- and trans-1,3-dichloropropene are 10061-01-5 and 10061-02-6, respectively. However, for screening purposes, the RSL for the combination of isomers is presented above.

4 - the CASRN for Endosulfan I and Endosulfan II are 959-98-8 and 33213-65-9, respectively, however for screening purposes the RSL for the combination of isomers is presented above.

CAS - Chemical Abstract Services Registry

DEQ - Department of Environmental Quality

EPA - U.S. Environmental Protection Agency

RSL - regional screening level

SL - screening level

ug/L - micrograms per liter

VISL - vapor intrusion screening level

ATTACHMENT H.1-2
SURFACE WATER SCREENING LEVELS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Notes	EPA Tap Water RSL (ug/L)	Utah DEQ Screening Levels (ug/L)	Selected SL (ug/L)
1,1,1-TRICHLOROETHANE	71-55-6		800	--	800
1,1,2,2-TETRACHLOROETHANE	79-34-5		0.076	--	0.076
1,1,2-TRICHLOROETHANE	79-00-5		0.041	--	0.041
1,1,2-TRICHLOROTRIFLUOROETHANE	76-13-1		1000	--	1000
1,1'-BIPHENYL	92-52-4		0.083	--	0.083
1,1-DICHLOROETHANE	75-34-3		2.8	--	2.8
1,1-DICHLOROETHENE	75-35-4		28	--	28
1,2,3-TRICHLOROBENZENE	87-61-6		0.7	--	0.7
1,2,4,5-TETRACHLOROBENZENE	95-94-3		0.017	--	0.017
1,2,4-TRICHLOROBENZENE	120-82-1		0.4	--	0.4
1,2,4-TRIMETHYLBENZENE	95-63-6		5.6	--	5.6
1,2-DIBROMO-3-CHLOROPROPANE	96-12-8		0.00033	--	0.00033
1,2-DIBROMOETHANE	106-93-4		0.0075	--	0.0075
1,2-DICHLOROBENZENE	95-50-1		30	--	30
1,2-DICHLOROETHANE	107-06-2		0.17	--	0.17
1,2-DICHLOROPROPANE	78-87-5		0.82	--	0.82
1,3,5-TRIMETHYLBENZENE	108-67-8		6	--	6
1,3-DICHLOROBENZENE	541-73-1		NA	--	NA
1,3-DICHLOROPROPYLENE	542-75-6		0.47	--	0.47
1,4-DICHLOROBENZENE	106-46-7		0.48	--	0.48
1,4-DIOXANE	123-91-1		0.46	--	0.46
2,3,4,6-TETRACHLOROPHENOL	58-90-2		24	--	24
2,4,5-TRICHLOROPHENOL	95-95-4		120	--	120
2,4,6-TRICHLOROPHENOL	88-06-2		1.2	--	1.2
2,4-DICHLOROPHENOL	120-83-2		4.6	--	4.6
2,4-DIMETHYLPHENOL	105-67-9		36	--	36
2,4-DINITROPHENOL	51-28-5		3.9	--	3.9
2,4-DINITROTOLUENE	121-14-2		0.24	--	0.24
2,6-DINITROTOLUENE	606-20-2		0.049	--	0.049
2-BUTANONE (MEK)	78-93-3		560	--	560
2-CHLORONAPHTHALENE	91-58-7		75	--	75
2-CHLOROPHENOL	95-57-8		9.1	--	9.1
2-HEXANONE	591-78-6		3.8	--	3.8
2-METHYLNAPHTHALENE	91-57-6		3.6	--	3.6
2-METHYLPHENOL	95-48-7		93	--	93
2-NITROANILINE	88-74-4		19	--	19
2-NITROPHENOL	88-75-5		NA	--	NA
3,3'-DICHLOROBENZIDINE	91-94-1		0.13	--	0.13
3-NITROANILINE	99-09-2		NA	--	NA
4,4'-DDD	72-54-8		0.0063	--	0.0063
4,4'-DDE	72-55-9		0.046	--	0.046
4,4'-DDT	50-29-3		0.23	--	0.23

ATTACHMENT H.1-2
SURFACE WATER SCREENING LEVELS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Notes	EPA Tap Water RSL (ug/L)	Utah DEQ Screening Levels (ug/L)	Selected SL (ug/L)
4,6-DINITRO-2-METHYLPHENOL	534-52-1		0.15	--	0.15
4-BROMOPHENYL PHENYL ETHER	101-55-3		NA	--	NA
4-CHLORO-3-METHYLPHENOL	59-50-7		140	--	140
4-CHLOROANILINE	106-47-8		0.37	--	0.37
4-CHLOROPHENYL PHENYL ETHER	7005-72-3		NA	--	NA
4-METHYL-2-PENTANONE (MIBK)	108-10-1		630	--	630
4-METHYLPHENOL	106-44-5		37	--	37
4-NITROANILINE	100-01-6		3.8	--	3.8
4-NITROPHENOL	100-02-7		NA	--	NA
ACENAPHTHENE	83-32-9		53	--	53
ACENAPHTHYLENE	208-96-8		NA	--	NA
ACETONE	67-64-1		1800	--	1800
ACETOPHENONE	98-86-2		190	--	190
ALDRIN	309-00-2		0.00092	--	0.00092
ALKALINITY	ALKALINITY		NA	--	NA
ALKALINITY, TOTAL (AS CACO3)	ALK		NA	--	NA
ALPHA-BHC	319-84-6		0.0072	--	0.0072
ALUMINUM	7429-90-5		2000	--	2000
ANTHRACENE	120-12-7		180	--	180
ANTIMONY	7440-36-0		0.78	--	0.78
ARSENIC	7440-38-2		0.052	--	0.052
ATRAZINE	1912-24-9		0.3	--	0.3
BARIUM	7440-39-3		380	--	380
BENZALDEHYDE	100-52-7		19	--	19
BENZENE	71-43-2		0.46	--	0.46
BENZO(A)ANTHRACENE	56-55-3		0.03	--	0.03
BENZO(A)PYRENE	50-32-8		0.025	--	0.025
BENZO(B)FLUORANTHENE	205-99-2		0.25	--	0.25
BENZO(G,H,I)PERYLENE	191-24-2		NA	--	NA
BENZO(K)FLUORANTHENE	207-08-9		2.5	--	2.5
BENZYL BUTYL PHTHALATE	85-68-7		16	--	16
BERYLLIUM	7440-41-7		2.5	--	2.5
BETA-BHC	319-85-7		0.025	--	0.025
BIS(2-CHLOROETHOXY)METHANE	111-91-1		5.9	--	5.9
BIS(2-CHLOROETHYL) ETHER	111-44-4		0.014	--	0.014
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7		5.6	--	5.6
BIS-CHLOROISOPROPYL ETHER	39638-32-9		NA	--	NA
BROMOCHLOROMETHANE	74-97-5		8.3	--	8.3
BROMODICHLOROMETHANE	75-27-4		0.13	--	0.13
BROMOFORM	75-25-2		3.3	--	3.3
BROMOMETHANE	74-83-9		0.75	--	0.75
CADMIUM	7440-43-9_water		0.18	--	0.18

ATTACHMENT H.1-2
SURFACE WATER SCREENING LEVELS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Notes	EPA Tap Water RSL (ug/L)	Utah DEQ Screening Levels (ug/L)	Selected SL (ug/L)
CALCIUM	7440-70-2		NA	--	NA
CAPROLACTAM	105-60-2		990	--	990
CARBAZOLE	86-74-8		NA	--	NA
CARBON DISULFIDE	75-15-0		81	--	81
CARBON TETRACHLORIDE	56-23-5		0.46	--	0.46
CHLORIDE	16887-00-6		NA	--	NA
CHLOROBENZENE	108-90-7		7.8	--	7.8
CHLOROETHANE	75-00-3		830	--	830
CHLOROFORM	67-66-3		0.22	--	0.22
CHLOROMETHANE	74-87-3		19	--	19
CHROMIUM	16065-83-1	1	2200	--	2200
CHRYSENE	218-01-9		25	--	25
CIS-1,2-DICHLOROETHENE	156-59-2		3.6	--	3.6
CIS-1,3-DICHLOROPROPENE	542-75-6	3	0.47	--	0.47
CIS-CHLORDANE	5103-71-9		0.36	--	0.36
COBALT	7440-48-4		0.6	--	0.6
COPPER	7440-50-8		80	--	80
CYCLOHEXANE	110-82-7		1300	--	1300
DELTA-BHC	319-86-8		NA	--	NA
DIBENZO(A,H)ANTHRACENE	53-70-3		0.025	--	0.025
DIBENZOFURAN	132-64-9		0.79	--	0.79
DIBROMOCHLOROMETHANE	124-48-1		0.87	--	0.87
DICHLORODIFLUOROMETHANE	75-71-8		20	--	20
DIELDRIN	60-57-1		0.0018	--	0.0018
DIETHYL PHTHALATE	84-66-2		1500	--	1500
DIMETHYL PHTHALATE	131-11-3		NA	--	NA
DI-N-BUTYLPHTHALATE	84-74-2		90	--	90
DI-N-OCTYLPHTHALATE	117-84-0		20	--	20
DISSOLVED OXYGEN	DISS_OXYGEN		NA	--	NA
ENDOSULFAN I	115-29-7	4	10	--	10
ENDOSULFAN II	115-29-7	4	10	--	10
ENDOSULFAN SULFATE	1031-07-8		11	--	11
ENDRIN	72-20-8		0.23	--	0.23
ENDRIN ALDEHYDE	7421-93-4		NA	--	NA
ENDRIN KETONE	53494-70-5		NA	--	NA
ETHANE	74-84-0		NA	--	NA
ETHENE	74-85-1		NA	--	NA
ETHYLBENZENE	100-41-4		1.5	--	1.5
FERROUS IRON	FE(FS)		NA	--	NA
FLOW	#N/A		NA	--	NA
FLUORANTHENE	206-44-0		80	--	80
FLUORENE	86-73-7		29	--	29

ATTACHMENT H.1-2
SURFACE WATER SCREENING LEVELS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Notes	EPA Tap Water RSL (ug/L)	Utah DEQ Screening Levels (ug/L)	Selected SL (ug/L)
GAMMA-BHC (LINDANE)	58-89-9		0.012	--	0.012
HEPTACHLOR	76-44-8		0.0014	--	0.0014
HEPTACHLOR EPOXIDE	1024-57-3		0.0014	--	0.0014
HEXACHLORO-1,3-BUTADIENE	87-68-3		0.14	--	0.14
HEXACHLOROBENZENE	118-74-1		0.0098	--	0.0098
HEXACHLOROCYCLOPENTADIENE	77-47-4		0.041	--	0.041
HEXACHLOROETHANE	67-72-1		0.33	--	0.33
INDENO(1,2,3-CD)PYRENE	193-39-5		0.25	--	0.25
IRON	7439-89-6		1400	--	1400
ISOPHORONE	78-59-1		78	--	78
ISOPROPYLBENZENE	98-82-8		45	--	45
LEAD	7439-92-1		15	--	15
M,P-XYLENE	108-38-3		19	--	19
M+P-XYLENES	108-38-3		19	--	19
MAGNESIUM	7439-95-4		NA	--	NA
MANGANESE	7439-96-5_non-diet		43	--	43
MERCURY	7487-94-7	2	0.57	--	0.57
METHANE	74-82-8		NA	--	NA
METHOXYCHLOR	72-43-5		3.7	--	3.7
METHYL ACETATE	79-20-9		2000	--	2000
METHYL TERT-BUTYL ETHER	1634-04-4		14	--	14
METHYLCYLOHEXANE	108-87-2		NA	--	NA
METHYLENE CHLORIDE	75-09-2		11	--	11
NAPHTHALENE	91-20-3		0.12	--	0.12
NICKEL	7440-02-0		39	--	39
NITRATE [AS N]	14797-55-8		3200	--	3200
NITRATE/NITRITE	Nitrate/Nitrite		NA	--	NA
NITRATE/NITRITE [AS N]	N		NA	--	NA
NITROBENZENE	98-95-3		0.14	--	0.14
N-NITROSO-DI-N-PROPYLAMINE	621-64-7		0.011	--	0.011
N-NITROSODIPHENYLAMINE	86-30-6		12	--	12
OXIDATION-REDUCTION POTENTIAL	ORP		NA	--	NA
O-XYLENE	95-47-6		19	--	19
PENTACHLOROPHENOL	87-86-5		0.041	--	0.041
PH	pH		NA	--	NA
PHENANTHRENE	85-01-8		NA	--	NA
PHENOL	108-95-2		580	--	580
POTASSIUM	7440-09-7		NA	--	NA
PYRENE	129-00-0		12	--	12
RATIO OF STABLE ISOTOPES HYDROGEN-2 AND HYDROGEN-1	NA		NA	--	NA
RATIO OF STABLE ISOTOPES OXYGEN-18 AND OXYGEN-16	NA		NA	--	NA
SELENIUM	7782-49-2		10	--	10

ATTACHMENT H.1-2
SURFACE WATER SCREENING LEVELS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Notes	EPA Tap Water RSL (ug/L)	Utah DEQ Screening Levels (ug/L)	Selected SL (ug/L)
SILVER	7440-22-4		9.4	--	9.4
SODIUM	7440-23-5		NA	--	NA
SPECIFIC CONDUCTANCE	SC		NA	--	NA
STYRENE	100-42-5		120	--	120
SULFATE	14808-79-8		NA	--	NA
TEMPERATURE	TEMP		NA	--	NA
TETRACHLOROETHENE	127-18-4		4.1	--	4.1
THALLIUM	7440-28-0		0.02	--	0.02
TOLUENE	108-88-3		110	--	110
TOTAL DISSOLVED SOLIDS	TDS		NA	--	NA
TOTAL ORGANIC CARBON	TOC		NA	--	NA
TOXAPHENE	8001-35-2		0.071	--	0.071
TRANS-1,2-DICHLOROETHENE	156-60-5		6.8	--	6.8
TRANS-1,3-DICHLOROPROPENE	542-75-6	3	0.47	--	0.47
TRANS-CHLORDANE	5103-74-2		1	--	1
TRICHLOROETHENE	79-01-6		0.28	--	0.28
TRICHLOROFLUOROMETHANE	75-69-4		520	--	520
TURBIDITY	TURB		NA	--	NA
VANADIUM	7440-62-2		8.6	--	8.6
VINYL ACETATE	108-05-4		41	--	41
VINYL CHLORIDE	75-01-4		0.019	--	0.019
ZINC	7440-66-6		600	--	600

Sources:

Utah Department of Environmental Quality. 2006. Initial Screening Levels.
https://documents.deq.utah.gov/environmental-response-and-remediation/ust-lust/branch/initial-screening-levels.pdf

USEPA. Default Residential Tap Water Regional Screening Levels (RSLs). May 2022 version.

Notes:

Screening levels based upon a target hazard quotient of 0.1 and a target cancer risk of 1E-06.

1 - as Chromium III

2 - as mercuric chloride

3 - the CASRN for cis- and trans-1,3-dichloropropene are 10061-01-5 and 10061-02-6, respectively however for screening purposes, the RSL for the combination of isomers is presented above.

4 - the CASRN for Endosulfan I and Endosulfan II are 959-98-8 and 33213-65-9, respectively, however for screening purposes the RSL for the combination of isomers is presented above.

CAS - Chemical Abstract Services Registry

DEQ - Department of Environmental Quality

EPA - U.S. Environmental Protection Agency

RSL - regional screening level

SL - screening level

ug/L - micrograms per liter

ATTACHMENT H.1-3
SOIL SCREENING LEVELS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Notes	EPA Residential Soil RSL (mg/kg)	Utah DEQ Screening Levels (mg/kg)	Selected SL (mg/kg)
1,1,1,2-TETRACHLOROETHANE	630-20-6		2	--	2
1,1,1-TRICHLOROETHANE	71-55-6		810	--	810
1,1,2,2-TETRACHLOROETHANE	79-34-5		0.6	--	0.6
1,1,2-TRICHLOROETHANE	79-00-5		0.15	--	0.15
1,1,2-TRICHLOROTRIFLUOROETHANE	76-13-1		670	--	670
1,1'-BIPHENYL	92-52-4		4.7	--	4.7
1,1-DICHLOROETHANE	75-34-3		3.6	--	3.6
1,1-DICHLOROETHENE	75-35-4		23	--	23
1,1-DICHLOROPROPENE	563-58-6		NA	--	NA
1,2,3-TRICHLOROBENZENE	87-61-6		6.3	--	6.3
1,2,3-TRICHLOROPROPANE	96-18-4		0.0051	--	0.0051
1,2,4,5-TETRACHLOROBENZENE	95-94-3		0.23	--	0.23
1,2,4-TRICHLOROBENZENE	120-82-1		5.8	--	5.8
1,2,4-TRIMETHYLBENZENE	95-63-6		30	--	30
1,2-DIBROMO-3-CHLOROPROPANE	96-12-8		0.0053	--	0.0053
1,2-DIBROMOETHANE	106-93-4		0.036	--	0.036
1,2-DICHLOROBENZENE	95-50-1		180	--	180
1,2-DICHLOROETHANE	107-06-2		0.46	--	0.46
1,2-DICHLOROPROPANE	78-87-5		1.6	--	1.6
1,3,5-TRIMETHYLBENZENE	108-67-8		27	--	27
1,3-DICHLOROBENZENE	541-73-1		NA	--	NA
1,3-DICHLOROPROPANE	142-28-9		160	--	160
1,3-DICHLOROPROPYLENE	542-75-6		1.8	--	1.8
1,4-DICHLOROBENZENE	106-46-7		2.6	--	2.6
1,4-DIOXANE	123-91-1		5.3	--	5.3
1-CHLOROHEXANE	544-10-5		NA	--	NA
2,2-DICHLOROPROPANE	594-20-7		NA	--	NA
2,3,4,6-TETRACHLOROPHENOL	58-90-2		190	--	190
2,4,5-TRICHLOROPHENOL	95-95-4		630	--	630
2,4,6-TRICHLOROPHENOL	88-06-2		6.3	--	6.3
2,4-DICHLOROPHENOL	120-83-2		19	--	19
2,4-DIMETHYLPHENOL	105-67-9		130	--	130
2,4-DINITROPHENOL	51-28-5		13	--	13
2,4-DINITROTOLUENE	121-14-2		1.7	--	1.7
2,6-DINITROTOLUENE	606-20-2		0.36	--	0.36
2-BUTANONE (MEK)	78-93-3		2700	--	2700
2-CHLORONAPHTHALENE	91-58-7		480	--	480

ATTACHMENT H.1-3
SOIL SCREENING LEVELS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Notes	EPA Residential Soil RSL (mg/kg)	Utah DEQ Screening Levels (mg/kg)	Selected SL (mg/kg)
2-CHLOROPHENOL	95-57-8		39	--	39
2-CHLOROTOLUENE	95-49-8		160	--	160
2-HEXANONE	591-78-6		20	--	20
2-METHYLNAPHTHALENE	91-57-6		24	--	24
2-METHYLPHENOL	95-48-7		320	--	320
2-NITROANILINE	88-74-4		63	--	63
2-NITROPHENOL	88-75-5		NA	--	NA
2-PHENYLBUTANE	135-98-8		780	--	780
3,3'-DICHLOROBENZIDINE	91-94-1		1.2	--	1.2
3-NITROANILINE	99-09-2		NA	--	NA
4,6-DINITRO-2-METHYLPHENOL	534-52-1		0.51	--	0.51
4-BROMOPHENYL PHENYL ETHER	101-55-3		NA	--	NA
4-CHLORO-3-METHYLPHENOL	59-50-7		630	--	630
4-CHLOROANILINE	106-47-8		2.7	--	2.7
4-CHLOROPHENYL PHENYL ETHER	7005-72-3		NA	--	NA
4-CHLOROTOLUENE	106-43-4		160	--	160
4-METHYL-2-PENTANONE (MIBK)	108-10-1		3300	--	3300
4-METHYLPHENOL	106-44-5		130	--	130
4-NITROANILINE	100-01-6		25	--	25
4-NITROPHENOL	100-02-7		NA	--	NA
ACENAPHTHENE	83-32-9		360	--	360
ACENAPHTHYLENE	208-96-8		NA	--	NA
ACETONE	67-64-1		7000	--	7000
ACETOPHENONE	98-86-2		780	--	780
ALLYL CHLORIDE	107-05-1		0.17	--	0.17
ANTHRACENE	120-12-7		1800	--	1800
ANTIMONY	7440-36-0		3.1	--	3.1
ARSENIC	7440-38-2		0.68	--	0.68
ASH	ASH		NA	--	NA
ATRAZINE	1912-24-9		2.4	--	2.4
BARIUM	7440-39-3		1500	--	1500
BENZALDEHYDE	100-52-7		170	--	170
BENZENE	71-43-2		1.2	0.2	0.2
BENZO(A)ANTHRACENE	56-55-3		1.1	--	1.1
BENZO(A)PYRENE	50-32-8		0.11	--	0.11
BENZO(B)FLUORANTHENE	205-99-2		1.1	--	1.1
BENZO(G,H,I)PERYLENE	191-24-2		NA	--	NA

ATTACHMENT H.1-3
SOIL SCREENING LEVELS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Notes	EPA Residential Soil RSL (mg/kg)	Utah DEQ Screening Levels (mg/kg)	Selected SL (mg/kg)
BENZO(K)FLUORANTHENE	207-08-9		11	--	11
BENZYL BUTYL PHTHALATE	85-68-7		290	--	290
BERYLLIUM	7440-41-7		16	--	16
BIS(2-CHLOROETHOXY)METHANE	111-91-1		19	--	19
BIS(2-CHLOROETHYL) ETHER	111-44-4		0.23	--	0.23
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7		39	--	39
BIS-CHLOROISOPROPYL ETHER	108-60-1		310	--	310
BROMOBENZENE	108-86-1		29	--	29
BROMOCHLOROMETHANE	74-97-5		15	--	15
BROMODICHLOROMETHANE	75-27-4		0.29	--	0.29
BROMOFORM	75-25-2		19	--	19
BROMOMETHANE	74-83-9		0.68	--	0.68
CADMIUM	7440-43-9_diet		0.71	--	0.71
CAPROLACTAM	105-60-2		3100	--	3100
CARBAZOLE	86-74-8		NA	--	NA
CARBON DISULFIDE	75-15-0		77	--	77
CARBON TETRACHLORIDE	56-23-5		0.65	--	0.65
CHLOROBENZENE	108-90-7		28	--	28
CHLOROETHANE	75-00-3		540	--	540
CHLOROFORM	67-66-3		0.32	--	0.32
CHLOROMETHANE	74-87-3		11	--	11
CHROMIUM	7440-47-3	1	12000	--	12000
CHRYSENE	218-01-9		110	--	110
CIS-1,2-DICHLOROETHENE	156-59-2		16	--	16
CIS-1,3-DICHLOROPROPENE	542-75-6	2	1.8	--	1.8
COBALT	7440-48-4		2.3	--	2.3
COPPER	7440-50-8		310	--	310
CYCLOHEXANE	110-82-7		650	--	650
CYMENE	99-87-6		NA	--	NA
DIBENZO(A,H)ANTHRACENE	53-70-3		0.11	--	0.11
DIBENZOFURAN	132-64-9		7.8	--	7.8
DIBROMOCHLOROMETHANE	124-48-1		8.3	--	8.3
DIBROMOMETHANE	74-95-3		2.4	--	2.4
DICHLORODIFLUOROMETHANE	75-71-8		8.7	--	8.7
DICHLOROMONOFLUOROMETHANE	75-43-4		NA	--	NA
DIETHYL PHTHALATE	84-66-2		5100	--	5100
DIMETHYL PHTHALATE	131-11-3		NA	--	NA

ATTACHMENT H.1-3
SOIL SCREENING LEVELS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Notes	EPA Residential Soil RSL (mg/kg)	Utah DEQ Screening Levels (mg/kg)	Selected SL (mg/kg)
DI-N-BUTYLPHTHALATE	84-74-2		630	--	630
DI-N-OCTYLPHTHALATE	117-84-0		63	--	63
ETHYL ACETATE	141-78-6		62	--	62
ETHYL ETHER	60-29-7		1600	--	1600
ETHYL METHACRYLATE	97-63-2		180	--	180
ETHYLBENZENE	100-41-4		5.8	5	5
FLUORANTHENE	206-44-0		240	--	240
FLUORENE	86-73-7		240	--	240
FRACTION ORGANIC CARBON	FOC		NA	--	NA
HEXACHLORO-1,3-BUTADIENE	87-68-3		1.2	--	1.2
HEXACHLOROBENZENE	118-74-1		0.078	--	0.078
HEXACHLOROCYCLOPENTADIENE	77-47-4		0.18	--	0.18
HEXACHLOROETHANE	67-72-1		1.8	--	1.8
INDENO(1,2,3-CD)PYRENE	193-39-5		1.1	--	1.1
ISOPHORONE	78-59-1		570	--	570
ISOPROPYLBENZENE	98-82-8		190	--	190
LEAD	7439-92-1		400	--	400
M,P-XYLENE	108-38-3	3	55	142	55
MANGANESE	7439-96-5_non-diet		180	--	180
MERCURY	7439-97-6		1.1	--	1.1
METHYL ACETATE	79-20-9		7800	--	7800
METHYL IODIDE	74-88-4		NA	--	NA
METHYL TERT-BUTYL ETHER	1634-04-4		47	0.3	0.3
METHYLCYLOHEXANE	108-87-2		NA	--	NA
METHYLENE CHLORIDE	75-09-2		35	--	35
NAPHTHALENE	91-20-3		2	51	2
N-BUTYLBENZENE	104-51-8		390	--	390
NICKEL	7440-02-0		150	--	150
NITROBENZENE	98-95-3		5.1	--	5.1
N-NITROSO-DI-N-PROPYLAMINE	621-64-7		0.078	--	0.078
N-NITROSODIPHENYLAMINE	86-30-6		110	--	110
N-PROPYLBENZENE	103-65-1		380	--	380
ORGANIC MATTER	OM		NA	--	NA
O-XYLENE	95-47-6		64	142	64
PENTACHLOROETHANE	76-01-7		7.7	--	7.7
PENTACHLOROPHENOL	87-86-5		1	--	1
PHENANTHRENE	85-01-8		NA	--	NA

ATTACHMENT H.1-3
SOIL SCREENING LEVELS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Notes	EPA Residential Soil RSL (mg/kg)	Utah DEQ Screening Levels (mg/kg)	Selected SL (mg/kg)
PHENOL	108-95-2		1900	--	1900
PYRENE	129-00-0		180	--	180
SELENIUM	7782-49-2		39	--	39
SILVER	7440-22-4		39	--	39
STYRENE	100-42-5		600	--	600
TERT-BUTYLBENZENE	98-06-6		780	--	780
TETRACHLOROETHENE	127-18-4		8.1	--	8.1
TETRAHYDROFURAN	109-99-9		1800	--	1800
THALLIUM	7440-28-0		0.078	--	0.078
TOLUENE	108-88-3		490	9	9
TRANS-1,2-DICHLOROETHENE	156-60-5		7	--	7
TRANS-1,3-DICHLOROPROPENE	542-75-6	2	1.8	--	1.8
TRANS-1,4-DICHLOROBUTENE	110-57-6		0.0074	--	0.0074
TRICHLOROETHENE	79-01-6		0.41	--	0.41
TRICHLOROFLUOROMETHANE	75-69-4		2300	--	2300
VANADIUM	7440-62-2		39	--	39
VINYL ACETATE	108-05-4		91	--	91
VINYL CHLORIDE	75-01-4		0.059	--	0.059
ZINC	7440-66-6		2300	--	2300

Sources:

Utah Department of Environmental Quality. 2006. Initial Screening Levels.
https://documents.deq.utah.gov/environmental-response-and-remediation/ust-lust/branch/initial-screening-levels.pdf

USEPA. Default Residential Soil Regional Screening Levels (RSLs). May 2022 version.

Notes:

Screening levels based upon a target hazard quotient of 0.1 and a target cancer risk of 1E-06.

1 - as Chromium III

2 - the CASRN for cis- and trans-1,3-dichloropropene are 10061-01-5 and 10061-02-6, respectively. However, for screening purposes, the RSL for the combination of isomers is presented above.

3 - the CASRN for m,p-xylene is 179601-23-1, however for screening purposes, the more conservative RSL for m-xylene is presented above.

CAS - Chemical Abstract Services Registry
DEQ - Department of Environmental Quality
EPA - U.S. Environmental Protection Agency
RSL - regional screening level
SL - screening level
mg/kg - milligrams per kilogram

ATTACHMENT H.1-4
SOIL GAS SCREENING LEVELS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Notes	EPA Soil Gas VISL ($\mu g/m^3$)
1,1,1-TRICHLOROETHANE	71-55-6		17400
1,1,2,2-TETRACHLOROETHANE	79-34-5		1.61
1,1,2-TRICHLOROETHANE	79-00-5		0.695
1,1,2-TRICHLOROTRIFLUOROETHANE	76-13-1		17400
1,1-DICHLOROETHANE	75-34-3		58.5
1,1-DICHLOROETHENE	75-35-4		695
1,2,4-TRICHLOROBENZENE	120-82-1		6.95
1,2,4-TRIMETHYLBENZENE	95-63-6		209
1,2-DIBROMOETHANE	106-93-4		0.156
1,2-DICHLOROBENZENE	95-50-1		695
1,2-DICHLOROETHANE	107-06-2		3.6
1,2-DICHLOROPROPANE	78-87-5		13.9
1,3,5-TRIMETHYLBENZENE	108-67-8		209
1,3-BUTADIENE	106-99-0		3.12
1,3-DICHLOROBENZENE	541-73-1		-
1,4-DICHLOROBENZENE	106-46-7		8.51
1,4-DIOXANE	123-91-1		18.7
2-BUTANONE (MEK)	78-93-3		17400
2-HEXANONE	591-78-6		104
4-BROMOFLUOROBENZENE	460-00-4		-
4-ETHYLTOLUENE	622-96-8		NA
4-METHYL-2-PENTANONE (MIBK)	108-10-1		10400
ACETONE	67-64-1		-
BENZENE	71-43-2		12
BENZYL CHLORIDE	100-44-7		1.91
BROMODICHLOROMETHANE	75-27-4		2.53
BROMOFORM	75-25-2		85.1
BROMOMETHANE	74-83-9		17.4
CARBON DISULFIDE	75-15-0		2430
CARBON TETRACHLORIDE	56-23-5		15.6
CHLOROBENZENE	108-90-7		174
CHLOROETHANE	75-00-3		13900
CHLOROFORM	67-66-3		4.07
CHLOROMETHANE	74-87-3		313
CIS-1,2-DICHLOROETHENE	156-59-2		-
CIS-1,3-DICHLOROPROPENE	542-75-6	1	23.4
CYCLOHEXANE	110-82-7		20900

ATTACHMENT H.1-4
SOIL GAS SCREENING LEVELS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Notes	EPA Soil Gas VISL ($\mu g/m^3$)
DIBROMOCHLOROMETHANE	124-48-1		-
DICHLORODIFLUOROMETHANE	75-71-8		348
ETHYL ACETATE	141-78-6		243
ETHYLBENZENE	100-41-4		37.4
HEXACHLORO-1,3-BUTADIENE	87-68-3		4.25
HEXANE	110-54-3		2430
M,P-XYLENE	108-38-3	2	348
METHYL TERT-BUTYL ETHER	1634-04-4		360
METHYLENE CHLORIDE	75-09-2		2090
N-HEPTANE	142-82-5		1390
O-XYLENE	95-47-6		348
STYRENE	100-42-5		3480
TETRACHLOROETHENE	127-18-4		139
TETRAHYDROFURAN	109-99-9		6950
TOLUENE	108-88-3		17400
TRANS-1,2-DICHLOROETHENE	156-60-5		139
TRANS-1,3-DICHLOROPROPENE	542-75-6	1	23.4
TRICHLOROETHENE	79-01-6		6.95
TRICHLOROFLUOROMETHANE	75-69-4		-
VINYL ACETATE	108-05-4		695
VINYL CHLORIDE	75-01-4		5.59

Sources:
USEPA. Default Residential Soil Gas Vapor Intrusion Screening Levels (VISLs). May 2022 version.

Notes:
Screening levels based upon a target hazard quotient of 0.1 and a target cancer risk of 1E-06.
1 - The CASRN for cis- and trans-1,3-dichloropropene are 10061-01-5 and 10061-02-6, respectively. However for screening purposes, the VISL for the combination of isomers is presented above.
2 - The CASRN for m,p-xylene is 179601-23-1, however, for screening purposes, the more conservative VISL for m-xylene is presented above.

CAS - Chemical Abstract Services Registry
EPA - U.S. Environmental Protection Agency
ug/m^3 - micrograms per cubic meter
VISL - vapor intrusion screening level

ATTACHMENT H.1-5
INDOOR AIR SCREENING LEVELS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Notes	EPA Residential Indoor Air RSL ($\mu g/m^3$)
1,1,1-TRICHLOROETHANE	71-55-6		520
1,1,2,2-TETRACHLOROETHANE	79-34-5		0.048
1,1,2-TRICHLOROETHANE	79-00-5		0.021
1,1,2-TRICHLOROTRIFLUOROETHANE	76-13-1		520
1,1-DICHLOROETHANE	75-34-3		1.8
1,1-DICHLOROETHENE	75-35-4		21
1,2,4-TRICHLOROBENZENE	120-82-1		0.21
1,2,4-TRIMETHYLBENZENE	95-63-6		6.3
1,2-DIBROMOETHANE	106-93-4		0.0047
1,2-DICHLOROBENZENE	95-50-1		21
1,2-DICHLOROETHANE	107-06-2		0.11
1,2-DICHLOROPROPANE	78-87-5		0.42
1,3,5-TRIMETHYLBENZENE	108-67-8		6.3
1,3-BUTADIENE	106-99-0		0.094
1,3-DICHLOROBENZENE	541-73-1		NA
1,4-DICHLOROBENZENE	106-46-7		0.26
1,4-DIOXANE	123-91-1		0.56
2,2,4-TRIMETHYLPENTANE	540-84-1		NA
2-BUTANONE (MEK)	78-93-3		520
2-HEXANONE	591-78-6		3.1
4-ETHYLTOLUENE	622-96-8		NA
4-METHYL-2-PENTANONE (MIBK)	108-10-1		310
ACETONE	67-64-1		
ALLYL CHLORIDE	107-05-1		0.1
BENZENE	71-43-2		0.36
BENZYL CHLORIDE	100-44-7		0.057
BROMODICHLOROMETHANE	75-27-4		0.076
BROMOFORM	75-25-2		2.6
BROMOMETHANE	74-83-9		0.52
CARBON DISULFIDE	75-15-0		73
CARBON TETRACHLORIDE	56-23-5		0.47
CHLOROBENZENE	108-90-7		5.2
CHLOROETHANE	75-00-3		420
CHLOROFORM	67-66-3		0.12
CHLOROMETHANE	74-87-3		9.4
CIS-1,2-DICHLOROETHENE	156-59-2		
CIS-1,3-DICHLOROPROPENE	542-75-6	1	0.7
CYCLOHEXANE	110-82-7		630
DIBROMOCHLOROMETHANE	124-48-1		
DICHLORODIFLUOROMETHANE	75-71-8		10
ETHANOL	64-17-5		NA
ETHYL ACETATE	141-78-6		7.3
ETHYLBENZENE	100-41-4		1.1

ATTACHMENT H.1-5
INDOOR AIR SCREENING LEVELS
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Chemical	CAS Number	Notes	EPA Residential Indoor Air RSL ($\mu g/m^3$)
HEXACHLORO-1,3-BUTADIENE	87-68-3		0.13
HEXANE	110-54-3		73
ISOPROPYL ALCOHOL	67-63-0		21
ISOPROPYLBENZENE	98-82-8		42
M,P-XYLENE	108-38-3	2	10
METHYL TERT-BUTYL ETHER	1634-04-4		11
METHYLENE CHLORIDE	75-09-2		63
NAPHTHALENE	91-20-3		0.083
N-HEPTANE	142-82-5		42
N-PROPYLBENZENE	103-65-1		100
O-XYLENE	95-47-6		10
STYRENE	100-42-5		100
TETRACHLOROETHENE	127-18-4		4.2
TETRAHYDROFURAN	109-99-9		210
TOLUENE	108-88-3		520
TRANS-1,2-DICHLOROETHENE	156-60-5		4.2
TRANS-1,3-DICHLOROPROPENE	542-75-6	1	0.7
TRICHLOROETHENE	79-01-6		0.21
TRICHLOROFLUOROMETHANE	75-69-4		
VINYL ACETATE	108-05-4		21
VINYL CHLORIDE	75-01-4		0.17

Sources:

USEPA. Default Residential Indoor Air Regional Screening Levels (RSLs). May 2022 version.

Notes:

1 - The CASRN for cis- and trans-1,3-dichloropropene are 10061-01-5 and 10061-02-6, respectively. However for screening purposes, the VISL for the combination of isomers is presented above.

2 - The CASRN for m,p-xylene is 179601-23-1, however, for screening purposes, the more conservative VISL for m-xylene is presented above.

CAS - Chemical Abstract Services Registry
EPA - U.S. Environmental Protection Agency
RSL - regional screening level
ug/m^3 - micrograms per cubic meter

Attachment H.2

Evaluation of Metal COPCs

ATTACHMENT H.2 - EVALUATION OF METAL COPCs

As shown in **Table H.2-8** of the human health risk assessment (HHRA), several metals were identified as chemicals of potential concern (COPCs) in soil/sediment, surface water, and/or groundwater. Metals are naturally present in the earth's crust and expected to be detected in soil/sediment and water. Based on the site history, there is no expectation that elevated metal concentrations would be attributable to site-related impacts. Even so, in accordance with U.S. Environmental Protection Agency (EPA) guidance (EPA 2002), potential risks from exposures to metals are discussed below. No metals were retained for further characterization in the HHRA.

Table 1 (Panel A) presents summary statistics (mean and range) for metal COPCs in groundwater. This table also shows the respective EPA residential tap water regional screening level (RSL) based on a target hazard quotient (HQ) of 0.1 and a target cancer risk of 1E-06. These RSLs were used to derive screening-level non-cancer hazards and cancer risk estimates for each metal using the maximum detected groundwater concentration. Those metals for which the non-cancer HQ is greater than 1 or the cancer risk is greater than 1E-04 are highlighted in bold text. As shown, aluminum, arsenic, cobalt, iron, lead, manganese, and thallium have non-cancer HQs greater than 1 and arsenic has a cancer risk greater than 1E-04. None of the site wells are currently being used for drinking water. In addition, many of the samples with groundwater exceedances represent shallow groundwater (within 20 feet of the ground surface), which is unlikely to be used as a drinking water source in the future.

Table 1 (Panel B) presents summary statistics (mean and range) for metal COPCs in surface water (i.e., seeps/springs). This table also shows the respective EPA residential tap water RSL based on a target HQ of 0.1 and a target cancer risk of 1E-06. These RSLs were used to derive screening-level non-cancer hazards and cancer risk estimates for each metal using the maximum detected surface concentration. Those metals for which the non-cancer HQ is greater than 1 or the cancer risk is greater than 1E-04 are highlighted in bold text. These results show that, if site seeps/springs were used as a drinking water source, there is the potential for unacceptable exposures; however, this exposure scenario is considered highly unlikely.

For lead, the residential tap water RSL of 15 micrograms per liter (ug/L) is set equal to the federal drinking water action level. Only one surface water sample and four groundwater samples reported lead concentrations greater than the action level (see in-text table below):

Medium	Location	Well Depth	Sampling Date	Lead Concentration
Surface water	SW-15	---	5/23/2016	127 ug/L
Groundwater	GW-015	0-5 ft	2/29/2016	15 ug/L
	GW-020	11.5-16.5 ft	3/1/2016	45.7 ug/L
	GW-10	13-18 ft	7/12/2016	21.4 ug/L
	GW-53	10-15 ft	7/11/2016	91.2 ug/L

Because surface water is not used as drinking water, application of the federal drinking water action level to surface water is overly protective. For the four groundwater exceedances, all these groundwater samples represent shallow groundwater (within 20 feet of the ground surface), which is unlikely to be used as a drinking water source in the future, and deeper groundwater concentrations of lead are below the federal drinking water action level.

Comparisons of site surface water to tap water RSLs are likely to significantly overestimate potential risks. Therefore, a revised set of screening-level risk calculations was also performed (see **Table 1** Panel C) using an adjusted screening level. This adjusted screening level was derived based on the default residential tap water RSL but scaled to reduce the exposure frequency from 350 days per year to 96 days per year (assuming seep/spring contact occurs 3 days per week for 8 months of the year), and assuming an incidental surface water rate is 10% of the total daily drinking water intake rate.

Table 1 (Panel C) screening-level non-cancer hazards and cancer risk estimates for each metal using the maximum detected surface concentration compared to the seep/spring-specific screening level. As shown, all metal COPCs have non-cancer HQs less than 1 and the estimated cancer risk for arsenic is within EPA's acceptable risk range of 1E-06 to 1E-04 (EPA 1991).

Table 1 (Panel D) presents summary statistics (mean and range) for metal COPCs in soil and sediment (i.e., collected from seeps/springs). This table also shows the respective EPA residential soil RSL based on a target HQ of 0.1 and a target cancer risk of 1E-06. These RSLs were used to derive screening-level non-cancer hazards and cancer risk estimates for each metal using the maximum detected soil/sediment concentration. Those metals for which the non-cancer HQ is greater than 1 or the cancer risk is greater than 1E-04 are highlighted in bold text. These results show that all metal COPCs have non-cancer HQs less than 1 and the estimated cancer risk for arsenic is within EPA's acceptable risk range of 1E-06 to 1E-04 (EPA 1991).

Attachment H.2 References

EPA. 1991. *Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions*. OSWER Directive 9355.0-30.

EPA. 2002a. *Role of Background in the CERCLA Cleanup Program*. OSWER Directive 9285.6-07P.

ATTACHMENT H.2, TABLE 1. HUMAN HEALTH RISK EVALUATION FOR METAL COPCs
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Panel A: Groundwater

COPC	CAS Number	Detected Concentrations (ug/L)			EPA Residential Tap Water RSL (ug/L)		RSL Exceedance Frequency		Based on Maximum	
		Mean	Min	Max	Non-cancer [THQ = 0.1]	Cancer [TCR = 1E-06]	No. of detected exceedances	No. of samples	Non-Cancer Hazard	Cancer Risk
Aluminum	7429-90-5	978	1.6	65,600	2,000	-	12	385	**3E+00**	-
Antimony	7440-36-0	0.52	0.27	1.4	0.78	-	1	385	2E-01	-
Arsenic	7440-38-2	1.1	0.16	14	0.60	0.052	385	385	**2E+00**	**3E-04**
Barium	7440-39-3	68	21	641	377	-	2	385	2E-01	-
Beryllium	7440-41-7	0.70	0.055	4.8	2.5	-	1	385	2E-01	-
Cadmium	7440-43-9	0.28	0.060	0.86	0.18	-	5	385	5E-01	-
Cobalt	7440-48-4	1.2	0.060	39	0.60	-	122	385	**7E+00**	-
Copper	7440-50-8	4.1	0.25	116	80	-	2	385	1E-01	-
Iron	7439-89-6	940	5.7	57,500	1,400	-	18	385	**4E+00**	-
Lead	7439-92-1	2.3	0.050	91	15	-	3	385	**6E+00**	-
Manganese	7439-96-5	128	0.21	2770	43	-	134	385	**6E+00**	-
Nickel	7440-02-0	9.0	0.18	239	39	-	15	385	6E-01	-
Thallium	7440-28-0	0.17	0.080	0.35	0.020	-	7	385	**2E+00**	-
Vanadium	7440-62-2	2.9	0.26	78	8.6	-	14	385	9E-01	-
Zinc	7440-66-6	37	1.0	1350	600	-	1	385	2E-01	-

Panel B: Surface Water Compared to Residential Tap Water Screening Levels

COPC	CAS Number	Detected Concentrations (ug/L)			EPA Residential Tap Water RSL (ug/L)		RSL Exceedance Frequency		Based on Maximum	
		Mean	Min	Max	Non-cancer [THQ = 0.1]	Cancer [TCR = 1E-06]	No. of detected exceedances	No. of samples	Non-Cancer Hazard	Cancer Risk
Aluminum	7429-90-5	415	18	8,230	2,000	-	1*	47	4E-01	-
Antimony	7440-36-0	0.71	0.25	3.0	0.78	-	4	47	4E-01	-
Arsenic	7440-38-2	4.4	0.41	66	0.60	0.052	47	47	**1E+01**	**1E-03**
Cadmium	7440-43-9	0.69	0.060	2.5	0.18	-	1*	47	1E+00	-
Cobalt	7440-48-4	0.74	0.060	16	0.60	-	3	47	**3E+00**	-
Copper	7440-50-8	5.8	0.31	102	80	-	1*	47	1E-01	-
Iron	7439-89-6	495	5.4	13,200	1,400	-	1*	47	9E-01	-
Lead	7439-92-1	4.7	0.076	127	15	-	1*	47	**8E+00**	-
Manganese	7439-96-5	16	0.17	351	43	-	2	47	8E-01	-
Thallium	7440-28-0	1.5	1.5	1.5	0.020	-	1*	47	**8E+00**	-
Vanadium	7440-62-2	3.1	1.1	32	8.6	-	1*	47	4E-01	-
Zinc	7440-66-6	53	4.3	757	600	-	1*	47	1E-01	-

*Single exceedance is for sample SW-15 collected from a spring on 5/4/2016.

Panel C: Surface Water Compared to Seep/Spring Screening Levels [a]

COPC	CAS Number	Detected Concentrations (ug/L)			Seep/Spring Surface Water SL (ug/L)		SL Exceedance Frequency		Based on Maximum	
		Mean	Min	Max	Non-cancer [THQ = 0.1]	Cancer [TCR = 1E-06]	No. of detected exceedances	No. of samples	Non-Cancer Hazard	Cancer Risk
Aluminum	7429-90-5	415	18	8,230	72,917	-	0	47	1E-02	-
Antimony	7440-36-0	0.71	0.25	3.0	28	-	0	47	1E-02	-
Arsenic	7440-38-2	4.4	0.41	66	22	1.88	5	47	3E-01	**4E-05**
Cadmium	7440-43-9	0.69	0.060	2.5	6.7	-	0	47	4E-02	-
Cobalt	7440-48-4	0.74	0.060	16	22	-	1*	47	7E-02	-
Copper	7440-50-8	5.8	0.31	102	2,913	-	0	47	4E-03	-
Iron	7439-89-6	495	5.4	13,200	51,042	-	0	47	3E-02	-
Lead	7439-92-1	4.7	0.076	127	547	-	0	47	2E-01	-
Manganese	7439-96-5	16	0.17	351	1,582	-	0	47	2E-02	-
Thallium	7440-28-0	1.5	1.5	1.5	0.73	-	1*	47	2E-01	-
Vanadium	7440-62-2	3.1	1.1	32	315	-	0	47	1E-02	-
Zinc	7440-66-6	53	4.3	757	21,875	-	0	47	3E-03	-

*Single exceedance is for sample SW-15 collected from a spring on 5/4/2016.

[a] The seep/spring surface water SL was derived based on the default EPA residential tap water RSL, but scaled to reduce the exposure frequency from 350 days per year to 96 days per year (assuming seep/spring contact occurs 3 days per week for 8 months of the year), and assuming an incidental surface water rate is 10% of the total daily drinking water intake rate.

ATTACHMENT H.2, TABLE 1. HUMAN HEALTH RISK EVALUATION FOR METAL COPCs
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Panel D: Shallow Soil/Sediment [b]

COPC	CAS Number	Detected Concentrations (mg/kg)			Residential Soil RSL (mg/kg)		RSL Exceedance Frequency		Based on Maximum		USGS Utah Background Soil Concentrations (mg/kg) [c]		
		Mean	Min	Max	Non-cancer [THQ = 0.1]	Cancer [TCR = 1E-06]	No. of detected exceedances	No. of samples	Non-Cancer Hazard	Cancer Risk	Mean	Min	Max
Arsenic	7440-38-2	13	6.1	24	3.5	0.68	3	3	7E-01	**4E-05**	5.8	1.3	25
Cadmium	7440-43-9	1.4	1.1	1.8	0.71	2120	3	3	3E-01	8E-10	0.3	<0.1	3
Cobalt	7440-48-4	4.9	4.5	5.2	2.3	424	3	3	2E-01	1E-08	7.0	0.60	25
Manganese	7439-96-5	419	288	583	183	-	3	3	3E-01	-	457	26	1,460
Thallium	7440-28-0	0.23	0.18	0.28	0.078	-	3	3	4E-01	-	0.45	<0.1	1.5

[b] Restricted to surface samples within 10 feet of the ground surface

[c] Smith, D.B., Cannon, W.F., Woodruff, L.G., Solano, Federico, Kilburn, J.E., and Fey, D.L., 2013, Geochemical and mineralogical data for soils of the conterminous United States: U.S. Geological Survey Data Series 801, 19 p., http://pubs.usgs.gov/ds/801/.

CAS = chemical abstract services
COPC = chemical of potential concern
mg/kg = milligrams per kilogram
RSL = regional screening level
SL = screening level
TCR = target risk
THQ = target HQ
ug/L = micrograms per liter
USGS = U.S. Geological Survey

Attachment H.3

Virginia Unified Risk Assessment Model Output for Construction Worker Exposures to Shallow Groundwater

CDM Smith

Virginia Department of Environmental Quality

VURAM

Virginia Unified Risk Assessment Model

VERSION: 3.1

Construction Worker Quantitative Risk Assessment Report

Site Name: Construction Worker - Shallow GW, VA PCE

Plume Program: CERCLA

Total Hazard Index/Risk for All Media

Non-Cancer Adult	Cancer
Total: 3.65E+00	Total: 9.56E-06
Exceeds Hazard Index!	*does not exceed cumulative risk*

Risk Based Performance Criteria

Default Hazard Index	Default Cumulative Risk-All Chemicals
1	1.00E-04

Contact Depth to Groundwater: Direct Less than 15ft

All Report Pages are Required for Risk Assessment Submission
DETAILED REPORT FOLLOWS

Risk Based Performance Criteria

Default Hazard Index	Default Risk Individual Chemical	Default Cumulative Risk-All Chemicals
1	1.00E-06	1.00E-04

Contact Depth to Groundwater: Direct Less than 15ft

Groundwater

Analyte: Benzene

CAS: 71-43-2

Concentration ug/L :	1.00E+00
RfDo:	1.00E-02
RfCi:	8.00E-02
SFO:	5.50E-02
IUR:	7.80E-06
Mutagen:	
VOC:	Y

Calculated Hazard Quotient/Risk

Non-Cancer Adult		Cancer	
Ingestion:	8.93E-06	Ingestion:	6.73E-11
Dermal:	1.04E-04	Dermal:	7.80E-10
Inhalation:	6.95E-03	Inhalation:	5.94E-08
Total:	**7.06E-03**	**Total:**	**6.02E-08**

% Contribution to Media Risk 0.19% 0.63%

Analyte: Bis(2-ethylhexyl)phthalate

CAS: 117-81-7

Concentration ug/L :	1.30E+02
RfDo:	1.00E-01
RfCi:	
SFO:	1.40E-02
IUR:	2.40E-06
Mutagen:	
VOC:	

Calculated Hazard Quotient/Risk

Non-Cancer Adult		Cancer	
Ingestion:	1.16E-04	Ingestion:	2.23E-09
Dermal:	4.11E-01	Dermal:	7.89E-06
Inhalation:		Inhalation:	
Total:	**4.12E-01**	**Total:**	**7.89E-06**

% Contribution to Media Risk 11.26% 82.53%

Exceeds Risk!

Analyte: Bromodichloromethane

CAS: 75-27-4

Concentration ug/L :	1.40E+00
RfDo:	8.00E-03
RfCi:	2.00E-02
SFO:	6.20E-02
IUR:	3.70E-05
Mutagen:	
VOC:	Y

Calculated Hazard Quotient/Risk

Non-Cancer Adult		Cancer	
Ingestion:	1.56E-05	Ingestion:	1.06E-10
Dermal:	6.31E-05	Dermal:	4.29E-10
Inhalation:		Inhalation:	2.69E-07
Total:	**7.87E-05**	**Total:**	**2.69E-07**

% Contribution to Media Risk 0.00% 2.81%

Risk Based Performance Criteria

Default Hazard Index	Default Risk Individual Chemical	Default Cumulative Risk-All Chemicals
1	1.00E-06	1.00E-04

Contact Depth to Groundwater: Direct Less than 15ft

Groundwater

Analyte: Chloroform

CAS: 67-66-3

Concentration ug/L :	6.60E+00
RfDo:	1.00E-01
RfCi:	2.44E-01
SFO:	3.10E-02
IUR:	2.30E-05
Mutagen:	
VOC:	Y

Calculated Hazard Quotient/Risk

Non-Cancer Adult		Cancer	
Ingestion:	5.89E-06	Ingestion:	2.50E-10
Dermal:	3.48E-05	Dermal:	1.48E-09
Inhalation:	1.21E-02	Inhalation:	9.31E-07
Total:	**1.21E-02**	**Total:**	**9.33E-07**

% Contribution to Media Risk 0.33% 9.75%

Analyte: Dibromochloromethane

CAS: 124-48-1

Concentration ug/L :	1.00E+00
RfDo:	7.00E-02
RfCi:	
SFO:	8.40E-02
IUR:	
Mutagen:	
VOC:	Y

Calculated Hazard Quotient/Risk

Non-Cancer Adult		Cancer	
Ingestion:	1.28E-06	Ingestion:	1.03E-10
Dermal:	4.60E-06	Dermal:	3.70E-10
Inhalation:		Inhalation:	
Total:	**5.87E-06**	**Total:**	**4.73E-10**

% Contribution to Media Risk 0.00% 0.00%

Analyte: Dichloroethylene, 1,2-cis-

CAS: 156-59-2

Concentration ug/L :	3.90E+00
RfDo:	2.00E-02
RfCi:	
SFO:	
IUR:	
Mutagen:	
VOC:	Y

Calculated Hazard Quotient/Risk

Non-Cancer Adult		Cancer	
Ingestion:	1.74E-05	Ingestion:	
Dermal:	1.56E-04	Dermal:	
Inhalation:		Inhalation:	
Total:	**1.73E-04**	**Total:**	**0.00E+00**

% Contribution to Media Risk 0.00% 0.00%

Risk Based Performance Criteria

Default Hazard Index	Default Risk Individual Chemical	Default Cumulative Risk-All Chemicals
1	1.00E-06	1.00E-04

Contact Depth to Groundwater: Direct Less than 15ft

Groundwater

Analyte: Dioxane, 1,4-

CAS: 123-91-1

Concentration ug/L :	2.10E+00
RfDo:	5.00E-01
RfCi:	7.20E-01
SFO:	1.00E-01
IUR:	5.00E-06
Mutagen:	
VOC:	Y

Calculated Hazard Quotient/Risk

Non-Cancer Adult		Cancer	
Ingestion:	3.75E-07	Ingestion:	2.57E-10
Dermal:	1.02E-07	Dermal:	6.99E-11
Inhalation:	1.14E-04	Inhalation:	5.62E-09
Total:	**1.14E-04**	**Total:**	**5.95E-09**

% Contribution to Media Risk 0.00% 0.06%

Analyte: Ethylbenzene

CAS: 100-41-4

Concentration ug/L :	1.00E+00
RfDo:	5.00E-02
RfCi:	9.00E+00
SFO:	1.10E-02
IUR:	2.50E-06
Mutagen:	
VOC:	Y

Calculated Hazard Quotient/Risk

Non-Cancer Adult		Cancer	
Ingestion:	1.79E-06	Ingestion:	1.35E-11
Dermal:	6.72E-05	Dermal:	5.07E-10
Inhalation:	5.32E-05	Inhalation:	1.64E-08
Total:	**1.22E-04**	**Total:**	**1.69E-08**

% Contribution to Media Risk 0.00% 0.18%

Analyte: Hexanone, 2-

CAS: 591-78-6

Concentration ug/L :	2.00E+01
RfDo:	5.00E-03
RfCi:	3.00E-02
SFO:	
IUR:	
Mutagen:	
VOC:	Y

Calculated Hazard Quotient/Risk

Non-Cancer Adult		Cancer	
Ingestion:	3.57E-04	Ingestion:	
Dermal:	1.06E-03	Dermal:	
Inhalation:	2.03E-01	Inhalation:	
Total:	**2.04E-01**	**Total:**	**0.00E+00**

% Contribution to Media Risk 5.59% 0.00%

Risk Based Performance Criteria

Default Hazard Index	Default Risk Individual Chemical	Default Cumulative Risk-All Chemicals
1	1.00E-06	1.00E-04

Contact Depth to Groundwater: Direct Less than 15ft

Groundwater

Analyte: Tetrachloroethylene

CAS: 127-18-4

Concentration ug/L :	6.00E+01
RfDo:	8.00E-03
RfCi:	4.07E-02
SFO:	2.10E-03
IUR:	2.60E-07
Mutagen:	
VOC:	Y

Calculated Hazard Quotient/Risk

Non-Cancer Adult		Cancer	
Ingestion:	6.70E-04	Ingestion:	1.54E-10
Dermal:	2.17E-02	Dermal:	5.00E-09
Inhalation:	5.67E-01	Inhalation:	8.22E-08
Total:	**5.90E-01**	**Total:**	**8.73E-08**

% Contribution to Media Risk 16.13% 0.91%

Analyte: Trichloroethylene

CAS: 79-01-6

Concentration ug/L :	1.20E+01
RfDo:	5.00E-04
RfCi:	2.15E-03
SFO:	4.60E-02
IUR:	4.10E-06
Mutagen:	Y
VOC:	Y

Calculated Hazard Quotient/Risk

Non-Cancer Adult		Cancer	
Ingestion:	2.14E-03	Ingestion:	6.75E-10
Dermal:	2.20E-02	Dermal:	6.92E-09
Inhalation:	2.41E+00	Inhalation:	2.90E-07
Total:	**2.43E+00**	**Total:**	**2.98E-07**

% Contribution to Media Risk 66.48% 3.12%

Exceeds Hazard!

Total Calculated Hazard Index/Risk For Media: Groundwater

Non-Cancer Adult		Cancer	
Ingestion:	3.34E-03	Ingestion:	3.85E-09
Dermal:	4.57E-01	Dermal:	7.91E-06
Inhalation:	3.19E+00	Inhalation:	1.65E-06
Total:	**3.65E+00**	**Total:**	**9.56E-06**

Risk Based Performance Criteria

Default Hazard Index	Default Risk Individual Chemical	Default Cumulative Risk-All Chemicals
1	1.00E-06	1.00E-04

Contact Depth to Groundwater: Direct Less than 15ft

Total Hazard Index/Risk for All Media

Non-Cancer Adult		Cancer	
Ingestion:	3.34E-03	Ingestion:	3.85E-09
Dermal:	4.57E-01	Dermal:	7.91E-06
Inhalation:	3.19E+00	Inhalation:	1.65E-06
Total:	**3.65E+00**	**Total:**	**9.56E-06**
Exceeds Hazard Index!		***does not exceed cumulative risk***	

Risk Based Performance Criteria

Default Hazard Index	Default Risk Individual Chemical	Default Cumulative Risk-All Chemicals
1	1.00E-06	1.00E-04

Contact Depth to Groundwater: Direct Less than 15ft

Construction Exposure Default Values

Symbol	Description	Value	Units
A	Construction Worker Soil Inhalation Dispersion Constant - Philadelphia	14.0111	(unitless)
AFcw	Construction Worker Soil Adherence Factor	0.3	(mg/cm2)
As	Areal extent of the site or contamination	0.5	(acres)
ATcw	Construction Worker Averaging Time: 365 x LT	25550	(days)
ATcw	Construction Worker Averaging Time	365	(days/yr)
ATcw-a	Construction Worker Averaging Time: EWcw x 7 x EDcw	350	(days)
B	Construction Worker Soil Inhalation Dispersion Constant - Philadelphia	19.6154	(unitless)
BWcw	Construction Worker Body Weight	80	(kg)
C	Construction Worker Soil Inhalation Dispersion Constant - Philadelphia	225.3397	(unitless)
DWcw	Construction Worker Days Worked	5	(days/week)
EDcw	Construction Worker Exposure Duration	1	(yrs)
EFcw	Construction Worker Exposure Frequency	250	(days/yrs)
EFcw-a	Construction Worker Air Exposure Frequency	250	(days/yr)
EFcw-s	Construction Worker Soil Exposure Frequency	250	(days/yr)
EFcw-vrp	Construction Worker Soil Exposure Frequency - VRP ONLY - Virginia DEQ	125	(days/yr)
ETcw	Construction Worker Exposure Time	8	(hrs/day)
ETcw-s	Construction Worker Soil Exposure Time	8	(hrs/day)
EWcw	Construction Worker Weeks Worked	50	(weeks/yr)
F(x)	Function Dependent on 0.886 × (Ut/Um)	0.194	(unitless)
Fd	Dispersion Correction Factor	0.185	(unitless)
IRcw	Construction Worker Soil Ingestion Rate	330	(mg/day)
n	Total soil porosity: 1-(ρb/ρs)	0.433962264150943	(unitless)
PEFsc	Particulate Emission Factor Subchronic - Virginia DEQ calculated	1266503136.97919	(m3/kg)

Risk Based Performance Criteria

Default Hazard Index	Default Risk Individual Chemical	Default Cumulative Risk-All Chemicals
1	1.00E-06	1.00E-04

Contact Depth to Groundwater: Direct Less than 15ft

Q/C	Inverse of the ratio of the 1-h geometric mean concentration to the emission flux along a straight road segment bisecting a square site - Virginia DEQ calculated	87.3689772162309	(g/m2-s per kg/m)
SAcw	Construction Worker Surface Area	3527	(cm2/day)
Tc	Total time over which construction occurs: EDcw*EWcw*7days/wk*24hrs/day*3600s/hr	30240000	(s)
TR-ACH	Trench Air Changes per Hour - Virginia DEQ	2	(h)-1
TR-ACvad	Trench Advection Coefficient Groundwater greater than 15ft - Virginia DEQ	0.25	(cm3/cm3)
TR-CF1	Trench Conversion Factor-1	0.001	(L/cm3)
TR-CF2	Trench Conversion Factor-2	10000	(cm2/m2)
TR-CF3	Trench Conversion Factor-3	3600	(s/hr)
TR-CF4	Trench Conversion Factor-4	1000000	(cm3/m3)
TR-D-dir	Trench Depth - groundwater less Than 15ft - Virginia DEQ	2.44	(m)
TR-D-ind	Trench Depth - groundwater greater than 15ft - Virginia DEQ	4.57	(m)
TR-Dsg	Trench - Depth to soil gas vapor source - Virginia DEQ	1	(cm)
TR-EFcw	Trench Construction Worker Exposure Frequency - Virginia DEQ	125	(days/yr)
TR-ETcw	Trench Construction Worker Exposure Time - Virginia DEQ	4	(hrs/day)
TR-EVcw	Trench Construction Worker Events - Virginia DEQ	1	(events/day)
TR-F	Trench Fraction of floor through which contaminant can enter - Virginia DEQ	1	(unitless)
TR-HV	Trench Thickness of Vadose Zone - groundwater greater than 15 ft - Virginia DEQ	30	(cm)
TR-IRcw	Trench Construction Worker Groundwater Ingestion Rate - Virginia DEQ	0.02	(L/day)
TR-KGH2O	Trench Gas-phase mass transfer coefficient of water vapor at 25deg C - Virginia DEQ	0.833	(cm/s)
TR-KLO2	Trench Liquid-phase mass transfer coefficient of oxygen at 25deg C - Virginia DEQ	0.002	(cm/s)
TR-L	Trench Length - Virginia DEQ	2.44	(m)
TR-Lgw	Trench Depth to groundwater - Virginia DEQ	488	(cm)
TR-MWH2O	Trench Molecular Weight of Water - Virginia DEQ	18	(unitless)
TR-MWO2	Trench Molecular Weight of Oxygen - Virginia DEQ	32	(unitless)
TR-Porvad	Trench Porosity in Vadose Zone - groundwater greater than 15ft - Virginia DEQ	0.44	(cm3/cm3)
TR-R	Trench Ideal Gas Constant - Virginia DEQ	0.000082	(atm-m3/mol-K)

Risk Based Performance Criteria

Default Hazard Index	Default Risk Individual Chemical	Default Cumulative Risk-All Chemicals
1	1.00E-06	1.00E-04

Contact Depth to Groundwater: Direct Less than 15ft

TR-Temp-F	Trench Temperature Fahrenheit - Virginia DEQ	77	(F)
TR-Temp-K	Trench Temperature - Virginia DEQ	298	(K)
TR-W	Trench Width - Virginia DEQ	0.91	(m)
TR-W/D	Trench Width to Depth Ratio - Virginia DEQ	0.38	(unitless)
Um	Mean Annual Wind Speed	4.69	(m/s)
Ut	Equivalent Threshold Value of Wind Speed at 7m	11.32	(m/s)
V	V Fraction of Vegetative Cover	0.5	(unitless)
Θa	Air filled soil porosity: n-Θw	0.133962264150943	(unitless)
Θw	Water filled soil porosity	0.3	(unitless)
ρb	Dry soil bulk density	1.5	(kg/L)
ρs	Soil particle density	2.65	(kg/L)

END OF REPORT

Virginia Department of Environmental Quality

VURAM

Virginia Unified Risk Assessment Model

VERSION: 3.1

Construction Worker Quantitative Risk Assessment Report

Site Name: VA PCE Plume, Well MW-14S

Program: CERCLA

Total Hazard Index/Risk for All Media

Non-Cancer Adult	Cancer
Total: 1.59E+00	Total: 1.97E-07
Exceeds Hazard Index!	*does not exceed cumulative risk*

Risk Based Performance Criteria

Default Hazard Index	Default Cumulative Risk-All Chemicals
1	1.00E-04

Contact Depth to Groundwater: Direct Less than 15ft

All Report Pages are Required for Risk Assessment Submission
DETAILED REPORT FOLLOWS

Site Name: VA PCE Plume, Well MW-14S **Construction**

Risk Based Performance Criteria

Default Hazard Index	Default Risk Individual Chemical	Default Cumulative Risk-All Chemicals
1	1.00E-06	1.00E-04

Contact Depth to Groundwater: Direct Less than 15ft

Groundwater

Analyte: Tetrachloroethylene

CAS: 127-18-4

Concentration ug/L :	7.50E+00
RfDo:	8.00E-03
RfCi:	4.07E-02
SFO:	2.10E-03
IUR:	2.60E-07
Mutagen:	
VOC:	Y

Calculated Hazard Quotient/Risk

Non-Cancer Adult		Cancer	
Ingestion:	8.37E-05	Ingestion:	1.93E-11
Dermal:	2.71E-03	Dermal:	6.25E-10
Inhalation:	7.09E-02	Inhalation:	1.03E-08
Total:	**7.37E-02**	**Total:**	**1.09E-08**

% Contribution to Media Risk 4.63% 5.54%

Analyte: Trichloroethylene

CAS: 79-01-6

Concentration ug/L :	7.50E+00
RfDo:	5.00E-04
RfCi:	2.15E-03
SFO:	4.60E-02
IUR:	4.10E-06
Mutagen:	Y
VOC:	Y

Calculated Hazard Quotient/Risk

Non-Cancer Adult		Cancer	
Ingestion:	1.34E-03	Ingestion:	4.22E-10
Dermal:	1.37E-02	Dermal:	4.32E-09
Inhalation:	1.50E+00	Inhalation:	1.82E-07
Total:	**1.52E+00**	**Total:**	**1.86E-07**

% Contribution to Media Risk 95.37% 94.46%

Exceeds Hazard!

Total Calculated Hazard Index/Risk For Media: Groundwater

Non-Cancer Adult		Cancer	
Ingestion:	1.42E-03	Ingestion:	4.41E-10
Dermal:	1.64E-02	Dermal:	4.95E-09
Inhalation:	1.57E+00	Inhalation:	1.92E-07
Total:	**1.59E+00**	**Total:**	**1.97E-07**

Risk Based Performance Criteria

Default Hazard Index	Default Risk Individual Chemical	Default Cumulative Risk-All Chemicals
1	1.00E-06	1.00E-04

Contact Depth to Groundwater: Direct Less than 15ft

Total Hazard Index/Risk for All Media

Non-Cancer Adult

Ingestion:	1.42E-03
Dermal:	1.64E-02
Inhalation:	1.57E+00
Total:	**1.59E+00**

Exceeds Hazard Index!

Cancer

Ingestion:	4.41E-10
Dermal:	4.95E-09
Inhalation:	1.92E-07
Total:	**1.97E-07**

does not exceed cumulative risk

Risk Based Performance Criteria

Default Hazard Index	Default Risk Individual Chemical	Default Cumulative Risk-All Chemicals
1	1.00E-06	1.00E-04

Contact Depth to Groundwater: Direct Less than 15ft

Construction Exposure Default Values

Symbol	Description	Value	Units
A	Construction Worker Soil Inhalation Dispersion Constant - Philadelphia	14.0111	(unitless)
AFcw	Construction Worker Soil Adherence Factor	0.3	(mg/cm2)
As	Areal extent of the site or contamination	0.5	(acres)
ATcw	Construction Worker Averaging Time: 365 x LT	25550	(days)
ATcw	Construction Worker Averaging Time	365	(days/yr)
ATcw-a	Construction Worker Averaging Time: EWcw x 7 x EDcw	350	(days)
B	Construction Worker Soil Inhalation Dispersion Constant - Philadelphia	19.6154	(unitless)
BWcw	Construction Worker Body Weight	80	(kg)
C	Construction Worker Soil Inhalation Dispersion Constant - Philadelphia	225.3397	(unitless)
DWcw	Construction Worker Days Worked	5	(days/week)
EDcw	Construction Worker Exposure Duration	1	(yrs)
EFcw	Construction Worker Exposure Frequency	250	(days/yrs)
EFcw-a	Construction Worker Air Exposure Frequency	250	(days/yr)
EFcw-s	Construction Worker Soil Exposure Frequency	250	(days/yr)
EFcw-vrp	Construction Worker Soil Exposure Frequency - VRP ONLY - Virginia DEQ	125	(days/yr)
ETcw	Construction Worker Exposure Time	8	(hrs/day)
ETcw-s	Construction Worker Soil Exposure Time	8	(hrs/day)
EWcw	Construction Worker Weeks Worked	50	(weeks/yr)
F(x)	Function Dependent on 0.886 × (Ut/Um)	0.194	(unitless)
Fd	Dispersion Correction Factor	0.185	(unitless)
IRcw	Construction Worker Soil Ingestion Rate	330	(mg/day)
n	Total soil porosity: 1-(ρb/ρs)	0.433962264150943	(unitless)
PEFsc	Particulate Emission Factor Subchronic - Virginia DEQ calculated	1266503136.97919	(m3/kg)

Risk Based Performance Criteria

Default Hazard Index	Default Risk Individual Chemical	Default Cumulative Risk-All Chemicals
1	1.00E-06	1.00E-04

Contact Depth to Groundwater: Direct Less than 15ft

Q/C	Inverse of the ratio of the 1-h geometric mean concentration to the emission flux along a straight road segment bisecting a square site - Virginia DEQ calculated	87.3689772162309	(g/m2-s per kg/m)
SAcw	Construction Worker Surface Area	3527	(cm2/day)
Tc	Total time over which construction occurs: EDcw*EWcw*7days/wk*24hrs/day*3600s/hr	30240000	(s)
TR-ACH	Trench Air Changes per Hour - Virginia DEQ	2	(h)-1
TR-ACvad	Trench Advection Coefficient Groundwater greater than 15ft - Virginia DEQ	0.25	(cm3/cm3)
TR-CF1	Trench Conversion Factor-1	0.001	(L/cm3)
TR-CF2	Trench Conversion Factor-2	10000	(cm2/m2)
TR-CF3	Trench Conversion Factor-3	3600	(s/hr)
TR-CF4	Trench Conversion Factor-4	1000000	(cm3/m3)
TR-D-dir	Trench Depth - groundwater less Than 15ft - Virginia DEQ	2.44	(m)
TR-D-ind	Trench Depth - groundwater greater than 15ft - Virginia DEQ	4.57	(m)
TR-Dsg	Trench - Depth to soil gas vapor source - Virginia DEQ	1	(cm)
TR-EFcw	Trench Construction Worker Exposure Frequency - Virginia DEQ	125	(days/yr)
TR-ETcw	Trench Construction Worker Exposure Time - Virginia DEQ	4	(hrs/day)
TR-EVcw	Trench Construction Worker Events - Virginia DEQ	1	(events/day)
TR-F	Trench Fraction of floor through which contaminant can enter - Virginia DEQ	1	(unitless)
TR-HV	Trench Thickness of Vadose Zone - groundwater greater than 15 ft - Virginia DEQ	30	(cm)
TR-IRcw	Trench Construction Worker Groundwater Ingestion Rate - Virginia DEQ	0.02	(L/day)
TR-KGH2O	Trench Gas-phase mass transfer coefficient of water vapor at 25deg C - Virginia DEQ	0.833	(cm/s)
TR-KLO2	Trench Liquid-phase mass transfer coefficient of oxygen at 25deg C - Virginia DEQ	0.002	(cm/s)
TR-L	Trench Length - Virginia DEQ	2.44	(m)
TR-Lgw	Trench Depth to groundwater - Virginia DEQ	488	(cm)
TR-MWH2O	Trench Molecular Weight of Water - Virginia DEQ	18	(unitless)
TR-MWO2	Trench Molecular Weight of Oxygen - Virginia DEQ	32	(unitless)
TR-Porvad	Trench Porosity in Vadose Zone - groundwater greater than 15ft - Virginia DEQ	0.44	(cm3/cm3)
TR-R	Trench Ideal Gas Constant - Virginia DEQ	0.000082	(atm-m3/mol-K)

Risk Based Performance Criteria

Default Hazard Index	Default Risk Individual Chemical	Default Cumulative Risk-All Chemicals
1	1.00E-06	1.00E-04

Contact Depth to Groundwater: Direct Less than 15ft

TR-Temp-F	Trench Temperature Fahrenheit - Virginia DEQ	77	(F)
TR-Temp-K	Trench Temperature - Virginia DEQ	298	(K)
TR-W	Trench Width - Virginia DEQ	0.91	(m)
TR-W/D	Trench Width to Depth Ratio - Virginia DEQ	0.38	(unitless)
Um	Mean Annual Wind Speed	4.69	(m/s)
Ut	Equivalent Threshold Value of Wind Speed at 7m	11.32	(m/s)
V	V Fraction of Vegetative Cover	0.5	(unitless)
Θa	Air filled soil porosity: n-Θw	0.133962264150943	(unitless)
Θw	Water filled soil porosity	0.3	(unitless)
ρb	Dry soil bulk density	1.5	(kg/L)
ρs	Soil particle density	2.65	(kg/L)

END OF REPORT

Virginia Department of Environmental Quality

VURAM

Virginia Unified Risk Assessment Model

VERSION: 3.1

Construction Worker Quantitative Risk Assessment Report

Site Name: SG Max, VA PCE Plume

Program: CERCLA

Total Hazard Index/Risk for All Media

Non-Cancer Adult	Cancer
Total: 7.72E-01	**Total: 2.77E-07**
does not exceed hazard index	***does not exceed cumulative risk***

Risk Based Performance Criteria

Default Hazard Index	Default Cumulative Risk-All Chemicals
1	**1.00E-04**

All Report Pages are Required for Risk Assessment Submission

DETAILED REPORT FOLLOWS

Risk Based Performance Criteria

Default Hazard Index	Default Risk Individual Chemical	Default Cumulative Risk-All Chemicals
1	1.00E-06	1.00E-04

Air

Analyte: Benzene
CAS: 71-43-2

Concentration ug/m3:	2.80E+01
RfDo:	
RfCi:	8.00E-02
SFO:	
IUR:	7.80E-06
Mutagen:	
VOC:	Y

Calculated Hazard Quotient/Risk

Non-Cancer Adult		Cancer	
Ingestion:		Ingestion:	
Dermal:		Dermal:	
Inhalation:	3.74E-04	Inhalation:	3.19E-09
Total:	**3.74E-04**	**Total:**	**3.19E-09**

% Contribution to Media Risk 0.05% 1.15%

Analyte: Bromodichloromethane
CAS: 75-27-4

Concentration ug/m3:	3.80E+01
RfDo:	
RfCi:	2.00E-02
SFO:	
IUR:	3.70E-05
Mutagen:	
VOC:	Y

Calculated Hazard Quotient/Risk

Non-Cancer Adult		Cancer	
Ingestion:		Ingestion:	
Dermal:		Dermal:	
Inhalation:	1.27E-03	Inhalation:	1.29E-08
Total:	**1.27E-03**	**Total:**	**1.29E-08**

% Contribution to Media Risk 0.17% 4.66%

Analyte: Butadiene, 1,3-
CAS: 106-99-0

Concentration ug/m3:	3.20E+01
RfDo:	
RfCi:	2.00E-03
SFO:	
IUR:	3.00E-05
Mutagen:	
VOC:	Y

Calculated Hazard Quotient/Risk

Non-Cancer Adult		Cancer	
Ingestion:		Ingestion:	
Dermal:		Dermal:	
Inhalation:	1.91E-02	Inhalation:	1.57E-08
Total:	**1.91E-02**	**Total:**	**1.57E-08**

% Contribution to Media Risk 2.48% 5.67%

Risk Based Performance Criteria

Default Hazard Index	Default Risk Individual Chemical	Default Cumulative Risk-All Chemicals
1	1.00E-06	1.00E-04

Air

Analyte: Chloroform
CAS: 67-66-3

Concentration	ug/m3:	4.80E+02
RfDo:		
RfCi:		2.44E-01
SFO:		
IUR:		2.30E-05
Mutagen:		
VOC:		Y

Calculated Hazard Quotient/Risk

Non-Cancer Adult		Cancer	
Ingestion:		Ingestion:	
Dermal:		Dermal:	
Inhalation:	1.80E-03	Inhalation:	1.39E-07
Total:	**1.80E-03**	**Total:**	**1.39E-07**

% Contribution to Media Risk 0.23% 50.00%

Analyte: Ethyl Acetate
CAS: 141-78-6

Concentration	ug/m3:	2.80E+02
RfDo:		
RfCi:		7.00E-01
SFO:		
IUR:		
Mutagen:		
VOC:		Y

Calculated Hazard Quotient/Risk

Non-Cancer Adult		Cancer	
Ingestion:		Ingestion:	
Dermal:		Dermal:	
Inhalation:	3.92E-04	Inhalation:	
Total:	**3.92E-04**	**Total:**	**0.00E+00**

% Contribution to Media Risk 0.05% 0.00%

Analyte: Tetrachloroethylene
CAS: 127-18-4

Concentration	ug/m3:	4.60E+04
RfDo:		
RfCi:		4.07E-02
SFO:		
IUR:		2.60E-07
Mutagen:		
VOC:		Y

Calculated Hazard Quotient/Risk

Non-Cancer Adult		Cancer	
Ingestion:		Ingestion:	
Dermal:		Dermal:	
Inhalation:	6.80E-01	Inhalation:	9.86E-08
Total:	**6.80E-01**	**Total:**	**9.86E-08**

% Contribution to Media Risk 88.14% 35.54%

Risk Based Performance Criteria

Default Hazard Index	Default Risk Individual Chemical	Default Cumulative Risk-All Chemicals
1	1.00E-06	1.00E-04

Air

Analyte: Trichloroethylene

CAS: 79-01-6

Concentration ug/m3:	1.80E+02
RfDo:	
RfCi:	2.15E-03
SFO:	
IUR:	4.10E-06
Mutagen:	Y
VOC:	Y

Calculated Hazard Quotient/Risk

Non-Cancer Adult		Cancer	
Ingestion:		Ingestion:	
Dermal:		Dermal:	
Inhalation:	6.85E-02	Inhalation:	8.27E-09
Total:	**6.85E-02**	**Total:**	**8.27E-09**

% Contribution to Media Risk 8.88% 2.98%

Total Calculated Hazard Index/Risk For Media: Air

Non-Cancer Adult		Cancer	
Ingestion:	0.00E+00	Ingestion:	0.00E+00
Dermal:	0.00E+00	Dermal:	0.00E+00
Inhalation:	7.72E-01	Inhalation:	2.77E-07
Total:	**7.72E-01**	**Total:**	**2.77E-07**

Risk Based Performance Criteria

Default Hazard Index	Default Risk Individual Chemical	Default Cumulative Risk-All Chemicals
1	1.00E-06	1.00E-04

Total Hazard Index/Risk for All Media

Non-Cancer Adult

Ingestion:	0.00E+00
Dermal:	0.00E+00
Inhalation:	7.72E-01
Total:	**7.72E-01**

does not exceed hazard index

Cancer

Ingestion:	0.00E+00
Dermal:	0.00E+00
Inhalation:	2.77E-07
Total:	**2.77E-07**

does not exceed cumulative risk

Risk Based Performance Criteria

Default Hazard Index	Default Risk Individual Chemical	Default Cumulative Risk-All Chemicals
1	1.00E-06	1.00E-04

Construction Exposure Default Values

Symbol	Description	Value	Units
A	Construction Worker Soil Inhalation Dispersion Constant - Philadelphia	14.0111	(unitless)
AFcw	Construction Worker Soil Adherence Factor	0.3	(mg/cm2)
As	Areal extent of the site or contamination	0.5	(acres)
ATcw	Construction Worker Averaging Time: 365 x LT	25550	(days)
ATcw	Construction Worker Averaging Time	365	(days/yr)
ATcw-a	Construction Worker Averaging Time: EWcw x 7 x EDcw	350	(days)
B	Construction Worker Soil Inhalation Dispersion Constant - Philadelphia	19.6154	(unitless)
BWcw	Construction Worker Body Weight	80	(kg)
C	Construction Worker Soil Inhalation Dispersion Constant - Philadelphia	225.3397	(unitless)
DWcw	Construction Worker Days Worked	5	(days/week)
EDcw	Construction Worker Exposure Duration	1	(yrs)
EFcw	Construction Worker Exposure Frequency	250	(days/yrs)
EFcw-a	Construction Worker Air Exposure Frequency	250	(days/yr)
EFcw-s	Construction Worker Soil Exposure Frequency	250	(days/yr)
EFcw-vrp	Construction Worker Soil Exposure Frequency - VRP ONLY - Virginia DEQ	125	(days/yr)
ETcw	Construction Worker Exposure Time	8	(hrs/day)
ETcw-s	Construction Worker Soil Exposure Time	8	(hrs/day)
EWcw	Construction Worker Weeks Worked	50	(weeks/yr)
F(x)	Function Dependent on 0.886 × (Ut/Um)	0.194	(unitless)
Fd	Dispersion Correction Factor	0.185	(unitless)
IRcw	Construction Worker Soil Ingestion Rate	330	(mg/day)
n	Total soil porosity: 1-(ρb/ρs)	0.433962264150943	(unitless)
PEFsc	Particulate Emission Factor Subchronic - Virginia DEQ calculated	1266503136.97919	(m3/kg)

Risk Based Performance Criteria

Default Hazard Index	Default Risk Individual Chemical	Default Cumulative Risk-All Chemicals
1	1.00E-06	1.00E-04

Q/C	Inverse of the ratio of the 1-h geometric mean concentration to the emission flux along a straight road segment bisecting a square site - Virginia DEQ	87.3689772162309	(g/m2-s per kg/m)
SAcw	Construction Worker Surface Area	3527	(cm2/day)
Tc	Total time over which construction occurs: EDcw*EWcw*7days/wk*24hrs/day*3600s/hr	30240000	(s)
TR-ACH	Trench Air Changes per Hour - Virginia DEQ	2	(h)-1
TR-ACvad	Trench Advection Coefficient Groundwater greater than 15ft - Virginia DEQ	0.25	(cm3/cm3)
TR-CF1	Trench Conversion Factor-1	0.001	(L/cm3)
TR-CF2	Trench Conversion Factor-2	10000	(cm2/m2)
TR-CF3	Trench Conversion Factor-3	3600	(s/hr)
TR-CF4	Trench Conversion Factor-4	1000000	(cm3/m3)
TR-D-dir	Trench Depth - groundwater less Than 15ft - Virginia DEQ	2.44	(m)
TR-D-ind	Trench Depth - groundwater greater than 15ft - Virginia DEQ	4.57	(m)
TR-Dsg	Trench - Depth to soil gas vapor source - Virginia DEQ	1	(cm)
TR-EFcw	Trench Construction Worker Exposure Frequency - Virginia DEQ	125	(days/yr)
TR-ETcw	Trench Construction Worker Exposure Time - Virginia DEQ	4	(hrs/day)
TR-EVcw	Trench Construction Worker Events - Virginia DEQ	1	(events/day)
TR-F	Trench Fraction of floor through which contaminant can enter - Virginia DEQ	1	(unitless)
TR-HV	Trench Thickness of Vadose Zone - groundwater greater than 15 ft - Virginia DEQ	30	(cm)
TR-IRcw	Trench Construction Worker Groundwater Ingestion Rate - Virginia DEQ	0.02	(L/day)
TR-KGH2O	Trench Gas-phase mass transfer coefficient of water vapor at 25deg C - Virginia DEQ	0.833	(cm/s)
TR-KLO2	Trench Liquid-phase mass transfer coefficient of oxygen at 25deg C - Virginia DEQ	0.002	(cm/s)
TR-L	Trench Length - Virginia DEQ	2.44	(m)
TR-Lgw	Trench Depth to groundwater - Virginia DEQ	488	(cm)
TR-MWH2O	Trench Molecular Weight of Water - Virginia DEQ	18	(unitless)
TR-MWO2	Trench Molecular Weight of Oxygen - Virginia DEQ	32	(unitless)
TR-Porvad	Trench Porosity in Vadose Zone - groundwater greater than 15ft - Virginia DEQ	0.44	(cm3/cm3)
TR-R	Trench Ideal Gas Constant - Virginia DEQ	0.000082	(atm-m3/mol-K)

Risk Based Performance Criteria

Default Hazard Index	Default Risk Individual Chemical	Default Cumulative Risk-All Chemicals
1	1.00E-06	1.00E-04

TR-Temp-F	Trench Temperature Fahrenheit - Virginia DEQ	77	(F)
TR-Temp-K	Trench Temperature - Virginia DEQ	298	(K)
TR-W	Trench Width - Virginia DEQ	0.91	(m)
TR-W/D	Trench Width to Depth Ratio - Virginia DEQ	0.38	(unitless)
Um	Mean Annual Wind Speed	4.69	(m/s)
Ut	Equivalent Threshold Value of Wind Speed at 7m	11.32	(m/s)
V	V Fraction of Vegetative Cover	0.5	(unitless)
Θa	Air filled soil porosity: n-Θw	0.133962264150943	(unitless)
Θw	Water filled soil porosity	0.3	(unitless)
ρb	Dry soil bulk density	1.5	(kg/L)
ρs	Soil particle density	2.65	(kg/L)

END OF REPORT

Attachment H.5

Detailed Human Health Risk Calculations for Groundwater

CDM Smith

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-01D**

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	CTE child	CTE adult		CTE lifetime
HIFnc (L/kg BW/day)	1.42E-02	1.02E-02	HIFc (L/kg BW/day)	1.43E-03

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Daily Intake (mg/kg/day)		Oral RfD (mg/kg/day)	Hazard Quotient		Daily Intake (mg/kg/day)	SFo $(mg/kg/day)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	1.42E-04	1.02E-04	5E-03	**3E-02**	**2E-02**	1.43E-05	-		---
BENZENE	71-43-2	5.00E-01	N	7.09E-06	5.12E-06	4E-03	**2E-03**	**1E-03**	7.14E-07	6E-02		**4E-08**
BROMODICHLOROMETHANE	75-27-4	5.00E-01	N	7.09E-06	5.12E-06	8E-03	**9E-04**	**6E-04**	7.14E-07	6E-02		**4E-08**
CHLOROFORM	67-66-3	2.20E-01	Y	3.12E-06	2.25E-06	1E-02	**3E-04**	**2E-04**	3.14E-07	3E-02		**1E-08**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	7.09E-06	5.12E-06	2E-03	**4E-03**	**3E-03**	7.14E-07	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	7.09E-06	5.12E-06	2E-02	**4E-04**	**3E-04**	7.14E-07	8E-02		**6E-08**
ETHYLBENZENE	100-41-4	2.60E-01	Y	3.69E-06	2.66E-06	5E-02	**7E-05**	**5E-05**	3.71E-07	1E-02		**4E-09**
TETRACHLOROETHENE	127-18-4	9.10E+00	Y	1.29E-04	9.31E-05	6E-03	**2E-02**	**2E-02**	1.30E-05	2E-03		**3E-08**
TRICHLOROETHENE	79-01-6	1.60E-01	Y	2.27E-06	1.64E-06	5E-04	**5E-03**	**3E-03**	M	TCE	M	**1E-08**
1,4-DIOXANE	123-91-1	5.00E+00	N	7.09E-05	5.12E-05	3E-02	**2E-03**	**2E-03**	7.14E-06	1E-01		**7E-07**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	1.10E+01	Y	1.56E-04	1.13E-04	2E-02	**8E-03**	**6E-03**	1.57E-05	1E-02		**2E-07**
						Total Ingestion:	**7E-02**	**5E-02**				**1E-06**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	CTE child	CTE adult		CTE lifetime
HIFnc (cm^2-event/kg/d)	2.61E+02	1.47E+02	HIFc (cm^2-event/kg/d)	2.22E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				DAD (mg/kg/d)		Dermal RfD (mg/kg/d)	Hazard Quotient		DAD (mg/kg/d)	Dermal SF $(mg/kg/d)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E-05	N	1.16E-05	7.54E-06	5E-03	**2E-03**	**2E-03**	1.10E-06	-		---
BENZENE	71-43-2	5.00E-07	N	2.12E-06	1.37E-06	4E-03	**5E-04**	**3E-04**	2.01E-07	6E-02		**1E-08**
BROMODICHLOROMETHANE	75-27-4	5.00E-07	N	9.93E-07	6.44E-07	8E-03	**1E-04**	**8E-05**	9.40E-08	6E-02		**6E-09**
CHLOROFORM	67-66-3	2.20E-07	Y	5.57E-07	3.61E-07	1E-02	**6E-05**	**4E-05**	5.28E-08	3E-02		**2E-09**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-07	N	1.76E-06	1.14E-06	2E-03	**9E-04**	**6E-04**	1.67E-07	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-07	N	9.50E-07	6.16E-07	2E-02	**5E-05**	**3E-05**	9.00E-08	8E-02		**8E-09**
ETHYLBENZENE	100-41-4	2.60E-07	Y	4.36E-06	2.83E-06	5E-02	**9E-05**	**6E-05**	4.13E-07	1E-02		**5E-09**
TETRACHLOROETHENE	127-18-4	9.10E-06	Y	1.52E-04	9.86E-05	6E-03	**3E-02**	**2E-02**	1.44E-05	2E-03		**3E-08**
TRICHLOROETHENE	79-01-6	1.60E-07	Y	7.43E-07	4.82E-07	5E-04	**1E-03**	**1E-03**	M	TCE	M	**4E-09**
1,4-DIOXANE	123-91-1	5.00E-06	N	5.03E-07	3.26E-07	3E-02	**2E-05**	**1E-05**	4.77E-08	1E-01		**5E-09**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA [a]		---	---	2E-02	**---**	**---**	---	1E-02		**---**
						Total Dermal:	**3E-02**	**2E-02**				**7E-08**

[a] Not assessed quantitatively per RAGS Part E because partition coefficients are outside the effective prediction domain (EPD)

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-01D**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	CTE child	CTE adult		CTE lifetime
HIFnc (mg-L/ug-m^3)	1.48E-05	1.48E-05	HIFc (mg-L/ug-m^3)	1.55E-06

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				EC (mg/m^3)		Inhalation RfC (mg/m^3)	Hazard Quotient		EC (ug/m^3)	Inhalation IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	1.48E-04	1.48E-04	3E-02	**5E-03**	**5E-03**	1.55E-02	-		---
BENZENE	71-43-2	5.00E-01	N	7.41E-06	7.41E-06	3E-02	**2E-04**	**2E-04**	7.73E-04	8E-06		**6E-09**
BROMODICHLOROMETHANE	75-27-4	5.00E-01	N	7.41E-06	7.41E-06	-	---	---	7.73E-04	4E-05		**3E-08**
CHLOROFORM	67-66-3	2.20E-01	Y	3.26E-06	3.26E-06	1E-01	**3E-05**	**3E-05**	3.40E-04	2E-05		**8E-09**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	7.41E-06	7.41E-06	-	---	---	7.73E-04	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	7.41E-06	7.41E-06	-	---	---	7.73E-04	-		---
ETHYLBENZENE	100-41-4	2.60E-01	Y	3.85E-06	3.85E-06	1E+00	**4E-06**	**4E-06**	4.02E-04	3E-06		**1E-09**
TETRACHLOROETHENE	127-18-4	9.10E+00	Y	1.35E-04	1.35E-04	4E-02	**3E-03**	**3E-03**	1.41E-02	3E-07		**4E-09**
TRICHLOROETHENE	79-01-6	1.60E-01	Y	2.37E-06	2.37E-06	2E-03	**1E-03**	**1E-03**	M	TCE	M	**9E-10**
1,4-DIOXANE	123-91-1	5.00E+00	N	7.41E-05	7.41E-05	3E-02	**2E-03**	**2E-03**	7.73E-03	5E-06		**4E-08**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	Not a Volatile COPC		---	---	-	---	---	---	2E-06		---
						Total Inhalation:	**1E-02**	**1E-02**				**9E-08**

		HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential MW-01D	**Total Ingestion**	**7E-02**	**5E-02**	**1E-06**
	Total Dermal Contact	**3E-02**	**2E-02**	**7E-08**
	Total Inhalation	**1E-02**	**1E-02**	**9E-08**
	ALL PATHWAYS	**1E-01**	**8E-02**	**1E-06**
	Based on NDs only	**5E-02**	**4E-02**	**1E-06**
	Based on Detects only	**7E-02**	**5E-02**	**3E-07**
	Site-related only	**7E-02**	**5E-02**	**8E-07**

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**MW-01D**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	CTE child	CTE adult
HIFc (L/kg BW/day)	4.05E-04	1.02E-03

COPC	CASRN	EPCmax GW (mg/L)	Daily Intake (mg/kg/day)				Oral SF $(mg/kg/day)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.00016	2.16E-07	1.30E-07	2.46E-07	8.19E-08	9.3E-03	kidney	2E-09	1E-09	2E-09	8E-10	**6E-09**
TRICHLOROETHENE	79-01-6	0.00016	6.49E-08		1.64E-07		3.7E-02	NHL+liver	2E-09		6E-09		**8E-09**
												Total Ingestion:	**1E-08**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	CTE child	CTE adult
HIFc (cm^2-event/kg/d)	7.45E+00	1.47E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	DAD (mg/kg/d)				Dermal SF $(mg/kg/d)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	1.60E-07	7.08E-08	4.25E-08	7.23E-08	2.41E-08	9.3E-03	kidney	7E-10	4E-10	7E-10	2E-10	**2E-09**
TRICHLOROETHENE	79-01-6	1.60E-07	2.12E-08		4.82E-08		3.7E-02	NHL+liver	8E-10		2E-09		**3E-09**
												Total Dermal:	**4E-09**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	CTE child	CTE adult
HIFc (mg-L/ug-m^3)	4.24E-07	4.24E-07

COPC	CASRN	EPCmax GW (ug/L)	Exp. Conc. (ug/m^3)				Inhalation IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.16	2.26E-04	1.36E-04	1.02E-04	3.39E-05	1.0E-06	kidney	2E-10	1E-10	1E-10	3E-11	**5E-10**
TRICHLOROETHENE	79-01-6	0.16	6.78E-05		6.78E-05		3.1E-06	NHL+liver	2E-10		2E-10		**4E-10**
												Total Inhalation:	**9E-10**

NHL = non-Hodkins lymphoma

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-03RB**

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	CTE child	CTE adult		CTE lifetime
HIFnc (L/kg BW/day)	1.42E-02	1.02E-02	HIFc (L/kg BW/day)	1.43E-03

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Daily Intake (mg/kg/day)		Oral RfD (mg/kg/day)	Hazard Quotient		Daily Intake (mg/kg/day)	SFo (mg/kg/day)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	1.42E-04	1.02E-04	5E-03	**3E-02**	**2E-02**	1.43E-05	-		---
BENZENE	71-43-2	5.00E-01	N	7.09E-06	5.12E-06	4E-03	**2E-03**	**1E-03**	7.14E-07	6E-02		**4E-08**
BROMODICHLOROMETHANE	75-27-4	4.90E-01	Y	6.95E-06	5.01E-06	8E-03	**9E-04**	**6E-04**	7.00E-07	6E-02		**4E-08**
CHLOROFORM	67-66-3	3.80E+00	Y	5.39E-05	3.89E-05	1E-02	**5E-03**	**4E-03**	5.43E-06	3E-02		**2E-07**
CIS-1,2-DICHLOROETHENE	156-59-2	1.50E+00	Y	2.13E-05	1.54E-05	2E-03	**1E-02**	**8E-03**	2.14E-06	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	7.09E-06	5.12E-06	2E-02	**4E-04**	**3E-04**	7.14E-07	8E-02		**6E-08**
ETHYLBENZENE	100-41-4	5.00E-01	N	7.09E-06	5.12E-06	5E-02	**1E-04**	**1E-04**	7.14E-07	1E-02		**8E-09**
TETRACHLOROETHENE	127-18-4	2.30E+02	Y	3.26E-03	2.35E-03	6E-03	**5E-01**	**4E-01**	3.29E-04	2E-03		**7E-07**
TRICHLOROETHENE	79-01-6	2.10E+00	Y	2.98E-05	2.15E-05	5E-04	**6E-02**	**4E-02**	M	TCE	M	**2E-07**
1,4-DIOXANE	123-91-1	2.70E-01	N	3.83E-06	2.76E-06	3E-02	**1E-04**	**9E-05**	3.86E-07	1E-01		**4E-08**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	6.00E+00	N	8.51E-05	6.14E-05	2E-02	**4E-03**	**3E-03**	8.57E-06	1E-02		**1E-07**
						Total Ingestion:	**7E-01**	**5E-01**				**1E-06**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	CTE child	CTE adult		CTE lifetime
HIFnc (cm^2-event/kg/d)	2.61E+02	1.47E+02	HIFc (cm^2-event/kg/d)	2.22E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				DAD (mg/kg/d)		Dermal RfD (mg/kg/d)	Hazard Quotient		DAD (mg/kg/d)	Dermal SF (mg/kg/d)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E-05	N	1.16E-05	7.54E-06	5E-03	**2E-03**	**2E-03**	1.10E-06	-		---
BENZENE	71-43-2	5.00E-07	N	2.12E-06	1.37E-06	4E-03	**5E-04**	**3E-04**	2.01E-07	6E-02		**1E-08**
BROMODICHLOROMETHANE	75-27-4	4.90E-07	Y	9.73E-07	6.31E-07	8E-03	**1E-04**	**8E-05**	9.22E-08	6E-02		**6E-09**
CHLOROFORM	67-66-3	3.80E-06	Y	9.62E-06	6.24E-06	1E-02	**1E-03**	**6E-04**	9.11E-07	3E-02		**3E-08**
CIS-1,2-DICHLOROETHENE	156-59-2	1.50E-06	Y	5.29E-06	3.43E-06	2E-03	**3E-03**	**2E-03**	5.01E-07	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-07	N	9.50E-07	6.16E-07	2E-02	**5E-05**	**3E-05**	9.00E-08	8E-02		**8E-09**
ETHYLBENZENE	100-41-4	5.00E-07	N	8.39E-06	5.44E-06	5E-02	**2E-04**	**1E-04**	7.95E-07	1E-02		**9E-09**
TETRACHLOROETHENE	127-18-4	2.30E-04	Y	3.84E-03	2.49E-03	6E-03	**6E-01**	**4E-01**	3.64E-04	2E-03		**8E-07**
TRICHLOROETHENE	79-01-6	2.10E-06	Y	9.76E-06	6.33E-06	5E-04	**2E-02**	**1E-02**	M	TCE	M	**6E-08**
1,4-DIOXANE	123-91-1	2.70E-07	N	2.72E-08	1.76E-08	3E-02	**9E-07**	**6E-07**	2.58E-09	1E-01		**3E-10**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA [a]		---	---	2E-02	**---**	**---**	---	1E-02		**---**
						Total Dermal:	**7E-01**	**4E-01**				**9E-07**

[a] Not assessed quantitatively per RAGS Part E because partition coefficients are outside the effective prediction domain (EPD)

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-03RB**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	CTE child	CTE adult		CTE lifetime
HIFnc (mg-L/ug-m^3)	1.48E-05	1.48E-05	HIFc (mg-L/ug-m^3)	1.55E-06

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				EC (mg/m^3)		Inhalation RfC (mg/m^3)	Hazard Quotient		EC (ug/m^3)	Inhalation IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	1.48E-04	1.48E-04	3E-02	**5E-03**	**5E-03**	1.55E-02	-		---
BENZENE	71-43-2	5.00E-01	N	7.41E-06	7.41E-06	3E-02	**2E-04**	**2E-04**	7.73E-04	8E-06		**6E-09**
BROMODICHLOROMETHANE	75-27-4	4.90E-01	Y	7.26E-06	7.26E-06	-	---	---	7.57E-04	4E-05		**3E-08**
CHLOROFORM	67-66-3	3.80E+00	Y	5.63E-05	5.63E-05	1E-01	**6E-04**	**6E-04**	5.87E-03	2E-05		**1E-07**
CIS-1,2-DICHLOROETHENE	156-59-2	1.50E+00	Y	2.22E-05	2.22E-05	-	---	---	2.32E-03	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	7.41E-06	7.41E-06	-	---	---	7.73E-04	-		---
ETHYLBENZENE	100-41-4	5.00E-01	N	7.41E-06	7.41E-06	1E+00	**7E-06**	**7E-06**	7.73E-04	3E-06		**2E-09**
TETRACHLOROETHENE	127-18-4	2.30E+02	Y	3.41E-03	3.41E-03	4E-02	**9E-02**	**9E-02**	3.55E-01	3E-07		**9E-08**
TRICHLOROETHENE	79-01-6	2.10E+00	Y	3.11E-05	3.11E-05	2E-03	**2E-02**	**2E-02**	M	TCE	M	**1E-08**
1,4-DIOXANE	123-91-1	2.70E-01	N	4.00E-06	4.00E-06	3E-02	**1E-04**	**1E-04**	4.17E-04	5E-06		**2E-09**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	Not a Volatile COPC		---	---	-	---	---	---	2E-06		---
						Total Inhalation:	**1E-01**	**1E-01**				**3E-07**

		HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential MW-03RB	**Total Ingestion**	**7E-01**	**5E-01**	**1E-06**
	Total Dermal Contact	**7E-01**	**4E-01**	**9E-07**
	Total Inhalation	**1E-01**	**1E-01**	**3E-07**
	ALL PATHWAYS	**1E+00**	**1E+00**	**3E-06**
	Based on NDs only	**4E-02**	**3E-02**	**3E-07**
	Based on Detects only	**1E+00**	**1E+00**	**2E-06**
	Site-related only	**1E+00**	**1E+00**	**2E-06**

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**MW-03RB**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	CTE child	CTE adult
HIFc (L/kg BW/day)	4.05E-04	1.02E-03

COPC	CASRN	EPCmax GW (mg/L)	Daily Intake (mg/kg/day)				Oral SF $(mg/kg/day)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.0021	2.84E-06	1.70E-06	3.22E-06	1.07E-06	9.3E-03	kidney	3E-08	2E-08	3E-08	1E-08	**8E-08**
TRICHLOROETHENE	79-01-6	0.0021	8.51E-07		2.15E-06		3.7E-02	NHL+liver	3E-08		8E-08		**1E-07**
												Total Ingestion:	**2E-07**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	CTE child	CTE adult
HIFc (cm^2-event/kg/d)	7.45E+00	1.47E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	DAD (mg/kg/d)				Dermal SF $(mg/kg/d)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	2.10E-06	9.29E-07	5.57E-07	9.49E-07	3.16E-07	9.3E-03	kidney	9E-09	5E-09	9E-09	3E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.10E-06	2.79E-07		6.33E-07		3.7E-02	NHL+liver	1E-08		2E-08		**3E-08**
												Total Dermal:	**6E-08**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	CTE child	CTE adult
HIFc (mg-L/ug-m^3)	4.24E-07	4.24E-07

COPC	CASRN	EPCmax GW (ug/L)	Exp. Conc. (ug/m^3)				Inhalation IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	2.1	2.97E-03	1.78E-03	1.33E-03	4.45E-04	1.0E-06	kidney	3E-09	2E-09	1E-09	4E-10	**7E-09**
TRICHLOROETHENE	79-01-6	2.1	8.90E-04		8.90E-04		3.1E-06	NHL+liver	3E-09		3E-09		**6E-09**
												Total Inhalation:	**1E-08**

NHL = non-Hodkins lymphoma

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-03RC**

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	CTE child	CTE adult		CTE lifetime
HIFnc (L/kg BW/day)	1.42E-02	1.02E-02	HIFc (L/kg BW/day)	1.43E-03

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Daily Intake (mg/kg/day)		Oral RfD (mg/kg/day)	Hazard Quotient		Daily Intake (mg/kg/day)	SFo (mg/kg/day)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	1.42E-04	1.02E-04	5E-03	**3E-02**	**2E-02**	1.43E-05	-		**---**
BENZENE	71-43-2	2.70E-01	Y	3.83E-06	2.76E-06	4E-03	**1E-03**	**7E-04**	3.86E-07	6E-02		**2E-08**
BROMODICHLOROMETHANE	75-27-4	1.90E-01	Y	2.70E-06	1.94E-06	8E-03	**3E-04**	**2E-04**	2.71E-07	6E-02		**2E-08**
CHLOROFORM	67-66-3	1.50E+00	Y	2.13E-05	1.54E-05	1E-02	**2E-03**	**2E-03**	2.14E-06	3E-02		**7E-08**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	7.09E-06	5.12E-06	2E-03	**4E-03**	**3E-03**	7.14E-07	-		**---**
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	7.09E-06	5.12E-06	2E-02	**4E-04**	**3E-04**	7.14E-07	8E-02		**6E-08**
ETHYLBENZENE	100-41-4	5.00E-01	N	7.09E-06	5.12E-06	5E-02	**1E-04**	**1E-04**	7.14E-07	1E-02		**8E-09**
TETRACHLOROETHENE	127-18-4	6.50E+00	Y	9.22E-05	6.65E-05	6E-03	**2E-02**	**1E-02**	9.29E-06	2E-03		**2E-08**
TRICHLOROETHENE	79-01-6	5.00E-01	N	7.09E-06	5.12E-06	5E-04	**1E-02**	**1E-02**	M	TCE	M	**5E-08**
1,4-DIOXANE	123-91-1	2.50E-01	N	3.55E-06	2.56E-06	3E-02	**1E-04**	**9E-05**	3.57E-07	1E-01		**4E-08**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	5.50E+00	N	7.80E-05	5.63E-05	2E-02	**4E-03**	**3E-03**	7.86E-06	1E-02		**1E-07**
						Total Ingestion:	**7E-02**	**5E-02**				**4E-07**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	CTE child	CTE adult		CTE lifetime
HIFnc (cm^2-event/kg/d)	2.61E+02	1.47E+02	HIFc (cm^2-event/kg/d)	2.22E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				DAD (mg/kg/d)		Dermal RfD (mg/kg/d)	Hazard Quotient		DAD (mg/kg/d)	Dermal SF (mg/kg/d)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E-05	N	1.16E-05	7.54E-06	5E-03	**2E-03**	**2E-03**	1.10E-06	-		**---**
BENZENE	71-43-2	2.70E-07	Y	1.14E-06	7.41E-07	4E-03	**3E-04**	**2E-04**	1.08E-07	6E-02		**6E-09**
BROMODICHLOROMETHANE	75-27-4	1.90E-07	Y	3.77E-07	2.45E-07	8E-03	**5E-05**	**3E-05**	3.57E-08	6E-02		**2E-09**
CHLOROFORM	67-66-3	1.50E-06	Y	3.80E-06	2.46E-06	1E-02	**4E-04**	**2E-04**	3.60E-07	3E-02		**1E-08**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-07	N	1.76E-06	1.14E-06	2E-03	**9E-04**	**6E-04**	1.67E-07	-		**---**
DIBROMOCHLOROMETHANE	124-48-1	5.00E-07	N	9.50E-07	6.16E-07	2E-02	**5E-05**	**3E-05**	9.00E-08	8E-02		**8E-09**
ETHYLBENZENE	100-41-4	5.00E-07	N	8.39E-06	5.44E-06	5E-02	**2E-04**	**1E-04**	7.95E-07	1E-02		**9E-09**
TETRACHLOROETHENE	127-18-4	6.50E-06	Y	1.09E-04	7.04E-05	6E-03	**2E-02**	**1E-02**	1.03E-05	2E-03		**2E-08**
TRICHLOROETHENE	79-01-6	5.00E-07	N	2.32E-06	1.51E-06	5E-04	**5E-03**	**3E-03**	M	TCE	M	**1E-08**
1,4-DIOXANE	123-91-1	2.50E-07	N	2.52E-08	1.63E-08	3E-02	**8E-07**	**5E-07**	2.38E-09	1E-01		**2E-10**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA [a]		---	---	2E-02	**---**	**---**	---	1E-02		**---**
						Total Dermal:	**3E-02**	**2E-02**				**7E-08**

[a] Not assessed quantitatively per RAGS Part E because partition coefficients are outside the effective prediction domain (EPD)

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-03RC**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	CTE child	CTE adult		CTE lifetime
HIFnc (mg-L/ug-m^3)	1.48E-05	1.48E-05	HIFc (mg-L/ug-m^3)	1.55E-06

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				EC (mg/m^3)		Inhalation RfC (mg/m^3)	Hazard Quotient		EC (ug/m^3)	Inhalation IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	1.48E-04	1.48E-04	3E-02	**5E-03**	**5E-03**	1.55E-02	-		---
BENZENE	71-43-2	2.70E-01	Y	4.00E-06	4.00E-06	3E-02	**1E-04**	**1E-04**	4.17E-04	8E-06		**3E-09**
BROMODICHLOROMETHANE	75-27-4	1.90E-01	Y	2.82E-06	2.82E-06	-	---	---	2.94E-04	4E-05		**1E-08**
CHLOROFORM	67-66-3	1.50E+00	Y	2.22E-05	2.22E-05	1E-01	**2E-04**	**2E-04**	2.32E-03	2E-05		**5E-08**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	7.41E-06	7.41E-06	-	---	---	7.73E-04	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	7.41E-06	7.41E-06	-	---	---	7.73E-04	-		---
ETHYLBENZENE	100-41-4	5.00E-01	N	7.41E-06	7.41E-06	1E+00	**7E-06**	**7E-06**	7.73E-04	3E-06		**2E-09**
TETRACHLOROETHENE	127-18-4	6.50E+00	Y	9.64E-05	9.64E-05	4E-02	**2E-03**	**2E-03**	1.00E-02	3E-07		**3E-09**
TRICHLOROETHENE	79-01-6	5.00E-01	N	7.41E-06	7.41E-06	2E-03	**4E-03**	**4E-03**	M	TCE	M	**3E-09**
1,4-DIOXANE	123-91-1	2.50E-01	N	3.71E-06	3.71E-06	3E-02	**1E-04**	**1E-04**	3.86E-04	5E-06		**2E-09**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	Not a Volatile COPC		---	---	-	---	---	---	2E-06		---
						Total Inhalation:	**1E-02**	**1E-02**				**8E-08**

		HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential MW-03RC	**Total Ingestion**	**7E-02**	**5E-02**	**4E-07**
	Total Dermal Contact	**3E-02**	**2E-02**	**7E-08**
	Total Inhalation	**1E-02**	**1E-02**	**8E-08**
	ALL PATHWAYS	**1E-01**	**8E-02**	**5E-07**
	Based on NDs only	**7E-02**	**5E-02**	**3E-07**
	Based on Detects only	**4E-02**	**3E-02**	**2E-07**
	Site-related only	**6E-02**	**5E-02**	**1E-07**

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**MW-03RC**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	CTE child	CTE adult
HIFc (L/kg BW/day)	4.05E-04	1.02E-03

COPC	CASRN	EPCmax GW (mg/L)	Daily Intake (mg/kg/day)				Oral SF $(mg/kg/day)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.0005	6.76E-07	4.05E-07	7.68E-07	2.56E-07	9.3E-03	kidney	6E-09	4E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	0.0005	2.03E-07		5.12E-07		3.7E-02	NHL+liver	7E-09		2E-08		**3E-08**
												Total Ingestion:	**5E-08**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	CTE child	CTE adult
HIFc (cm^2-event/kg/d)	7.45E+00	1.47E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	DAD (mg/kg/d)				Dermal SF $(mg/kg/d)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	5.00E-07	2.21E-07	1.33E-07	2.26E-07	7.53E-08	9.3E-03	kidney	2E-09	1E-09	2E-09	7E-10	**6E-09**
TRICHLOROETHENE	79-01-6	5.00E-07	6.64E-08		1.51E-07		3.7E-02	NHL+liver	2E-09		6E-09		**8E-09**
												Total Dermal:	**1E-08**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	CTE child	CTE adult
HIFc (mg-L/ug-m^3)	4.24E-07	4.24E-07

COPC	CASRN	EPCmax GW (ug/L)	Exp. Conc. (ug/m^3)				Inhalation IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.5	7.06E-04	4.24E-04	3.18E-04	1.06E-04	1.0E-06	kidney	7E-10	4E-10	3E-10	1E-10	**2E-09**
TRICHLOROETHENE	79-01-6	0.5	2.12E-04		2.12E-04		3.1E-06	NHL+liver	7E-10		7E-10		**1E-09**
												Total Inhalation:	**3E-09**

NHL = non-Hodkins lymphoma

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-03RD**

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	CTE child	CTE adult		CTE lifetime
HIFnc (L/kg BW/day)	1.42E-02	1.02E-02	HIFc (L/kg BW/day)	1.43E-03

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Daily Intake (mg/kg/day)		Oral RfD (mg/kg/day)	Hazard Quotient		Daily Intake (mg/kg/day)	SFo (mg/kg/day)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	1.42E-04	1.02E-04	5E-03	**3E-02**	**2E-02**	1.43E-05	-		---
BENZENE	71-43-2	2.00E-01	Y	2.84E-06	2.05E-06	4E-03	**7E-04**	**5E-04**	2.86E-07	6E-02		**2E-08**
BROMODICHLOROMETHANE	75-27-4	5.00E-01	N	7.09E-06	5.12E-06	8E-03	**9E-04**	**6E-04**	7.14E-07	6E-02		**4E-08**
CHLOROFORM	67-66-3	1.50E-01	Y	2.13E-06	1.54E-06	1E-02	**2E-04**	**2E-04**	2.14E-07	3E-02		**7E-09**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	7.09E-06	5.12E-06	2E-03	**4E-03**	**3E-03**	7.14E-07	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	7.09E-06	5.12E-06	2E-02	**4E-04**	**3E-04**	7.14E-07	8E-02		**6E-08**
ETHYLBENZENE	100-41-4	5.00E-01	N	7.09E-06	5.12E-06	5E-02	**1E-04**	**1E-04**	7.14E-07	1E-02		**8E-09**
TETRACHLOROETHENE	127-18-4	5.00E-01	N	7.09E-06	5.12E-06	6E-03	**1E-03**	**9E-04**	7.14E-07	2E-03		**2E-09**
TRICHLOROETHENE	79-01-6	5.00E-01	N	7.09E-06	5.12E-06	5E-04	**1E-02**	**1E-02**	M	TCE	M	**5E-08**
1,4-DIOXANE	123-91-1	2.20E-01	N	3.12E-06	2.25E-06	3E-02	**1E-04**	**8E-05**	3.14E-07	1E-01		**3E-08**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA	NA	---	---	2E-02	---	---	---	1E-02		---
						Total Ingestion:	**5E-02**	**4E-02**				**2E-07**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	CTE child	CTE adult		CTE lifetime
HIFnc (cm^2-event/kg/d)	2.61E+02	1.47E+02	HIFc (cm^2-event/kg/d)	2.22E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				DAD (mg/kg/d)		Dermal RfD (mg/kg/d)	Hazard Quotient		DAD (mg/kg/d)	Dermal SF (mg/kg/d)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E-05	N	1.16E-05	7.54E-06	5E-03	**2E-03**	**2E-03**	1.10E-06	-		---
BENZENE	71-43-2	2.00E-07	Y	8.47E-07	5.49E-07	4E-03	**2E-04**	**1E-04**	8.02E-08	6E-02		**4E-09**
BROMODICHLOROMETHANE	75-27-4	5.00E-07	N	9.93E-07	6.44E-07	8E-03	**1E-04**	**8E-05**	9.40E-08	6E-02		**6E-09**
CHLOROFORM	67-66-3	1.50E-07	Y	3.80E-07	2.46E-07	1E-02	**4E-05**	**2E-05**	3.60E-08	3E-02		**1E-09**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-07	N	1.76E-06	1.14E-06	2E-03	**9E-04**	**6E-04**	1.67E-07	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-07	N	9.50E-07	6.16E-07	2E-02	**5E-05**	**3E-05**	9.00E-08	8E-02		**8E-09**
ETHYLBENZENE	100-41-4	5.00E-07	N	8.39E-06	5.44E-06	5E-02	**2E-04**	**1E-04**	7.95E-07	1E-02		**9E-09**
TETRACHLOROETHENE	127-18-4	5.00E-07	N	8.35E-06	5.42E-06	6E-03	**1E-03**	**9E-04**	7.91E-07	2E-03		**2E-09**
TRICHLOROETHENE	79-01-6	5.00E-07	N	2.32E-06	1.51E-06	5E-04	**5E-03**	**3E-03**	M	TCE	M	**1E-08**
1,4-DIOXANE	123-91-1	2.20E-07	N	2.22E-08	1.44E-08	3E-02	**7E-07**	**5E-07**	2.10E-09	1E-01		**2E-10**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA [a]		---	---	2E-02	---	---	---	1E-02		---
						Total Dermal:	**1E-02**	**6E-03**				**4E-08**

[a] Not assessed quantitatively per RAGS Part E because partition coefficients are outside the effective prediction domain (EPD)

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-03RD**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	CTE child	CTE adult		CTE lifetime
HIFnc (mg-L/ug-m^3)	1.48E-05	1.48E-05	HIFc (mg-L/ug-m^3)	1.55E-06

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				EC (mg/m^3)		Inhalation RfC (mg/m^3)	Hazard Quotient		EC (ug/m^3)	Inhalation IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	1.48E-04	1.48E-04	3E-02	**5E-03**	**5E-03**	1.55E-02	-		---
BENZENE	71-43-2	2.00E-01	Y	2.97E-06	2.97E-06	3E-02	**1E-04**	**1E-04**	3.09E-04	8E-06		**2E-09**
BROMODICHLOROMETHANE	75-27-4	5.00E-01	N	7.41E-06	7.41E-06	-	---	---	7.73E-04	4E-05		**3E-08**
CHLOROFORM	67-66-3	1.50E-01	Y	2.22E-06	2.22E-06	1E-01	**2E-05**	**2E-05**	2.32E-04	2E-05		**5E-09**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	7.41E-06	7.41E-06	-	---	---	7.73E-04	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	7.41E-06	7.41E-06	-	---	---	7.73E-04	-		---
ETHYLBENZENE	100-41-4	5.00E-01	N	7.41E-06	7.41E-06	1E+00	**7E-06**	**7E-06**	7.73E-04	3E-06		**2E-09**
TETRACHLOROETHENE	127-18-4	5.00E-01	N	7.41E-06	7.41E-06	4E-02	**2E-04**	**2E-04**	7.73E-04	3E-07		**2E-10**
TRICHLOROETHENE	79-01-6	5.00E-01	N	7.41E-06	7.41E-06	2E-03	**4E-03**	**4E-03**	M	TCE	M	**3E-09**
1,4-DIOXANE	123-91-1	2.20E-01	N	3.26E-06	3.26E-06	3E-02	**1E-04**	**1E-04**	3.40E-04	5E-06		**2E-09**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	Not a Volatile COPC		---	---	-	---	---	---	2E-06		---
						Total Inhalation:	**9E-03**	**9E-03**				**4E-08**

		HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential MW-03RD	**Total Ingestion**	**5E-02**	**4E-02**	**2E-07**
	Total Dermal Contact	**1E-02**	**6E-03**	**4E-08**
	Total Inhalation	**9E-03**	**9E-03**	**4E-08**
	ALL PATHWAYS	**7E-02**	**5E-02**	**3E-07**
	Based on NDs only	**7E-02**	**5E-02**	**3E-07**
	Based on Detects only	**1E-03**	**9E-04**	**4E-08**
	Site-related only	**3E-02**	**2E-02**	**1E-07**

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**MW-03RD**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	CTE child	CTE adult
HIFc (L/kg BW/day)	4.05E-04	1.02E-03

COPC	CASRN	EPCmax GW (mg/L)	Daily Intake (mg/kg/day)				Oral SF $(mg/kg/day)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.0005	6.76E-07	4.05E-07	7.68E-07	2.56E-07	9.3E-03	kidney	6E-09	4E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	0.0005	2.03E-07		5.12E-07		3.7E-02	NHL+liver	7E-09		2E-08		**3E-08**
												Total Ingestion:	**5E-08**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	CTE child	CTE adult
HIFc (cm^2-event/kg/d)	7.45E+00	1.47E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	DAD (mg/kg/d)				Dermal SF $(mg/kg/d)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	5.00E-07	2.21E-07	1.33E-07	2.26E-07	7.53E-08	9.3E-03	kidney	2E-09	1E-09	2E-09	7E-10	**6E-09**
TRICHLOROETHENE	79-01-6	5.00E-07	6.64E-08		1.51E-07		3.7E-02	NHL+liver	2E-09		6E-09		**8E-09**
												Total Dermal:	**1E-08**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	CTE child	CTE adult
HIFc (mg-L/ug-m^3)	4.24E-07	4.24E-07

COPC	CASRN	EPCmax GW (ug/L)	Exp. Conc. (ug/m^3)				Inhalation IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.5	7.06E-04	4.24E-04	3.18E-04	1.06E-04	1.0E-06	kidney	7E-10	4E-10	3E-10	1E-10	**2E-09**
TRICHLOROETHENE	79-01-6	0.5	2.12E-04		2.12E-04		3.1E-06	NHL+liver	7E-10		7E-10		**1E-09**
												Total Inhalation:	**3E-09**

NHL = non-Hodkins lymphoma

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-08C**

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	CTE child	CTE adult		CTE lifetime
HIFnc (L/kg BW/day)	1.42E-02	1.02E-02	HIFc (L/kg BW/day)	1.43E-03

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Daily Intake (mg/kg/day)		Oral RfD (mg/kg/day)	Hazard Quotient		Daily Intake (mg/kg/day)	SFo (mg/kg/day)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	1.42E-04	1.02E-04	5E-03	**3E-02**	**2E-02**	1.43E-05	-		---
BENZENE	71-43-2	1.30E-01	Y	1.84E-06	1.33E-06	4E-03	**5E-04**	**3E-04**	1.86E-07	6E-02		**1E-08**
BROMODICHLOROMETHANE	75-27-4	5.00E-01	N	7.09E-06	5.12E-06	8E-03	**9E-04**	**6E-04**	7.14E-07	6E-02		**4E-08**
CHLOROFORM	67-66-3	1.70E-01	Y	2.41E-06	1.74E-06	1E-02	**2E-04**	**2E-04**	2.43E-07	3E-02		**8E-09**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	7.09E-06	5.12E-06	2E-03	**4E-03**	**3E-03**	7.14E-07	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	7.09E-06	5.12E-06	2E-02	**4E-04**	**3E-04**	7.14E-07	8E-02		**6E-08**
ETHYLBENZENE	100-41-4	5.00E-01	N	7.09E-06	5.12E-06	5E-02	**1E-04**	**1E-04**	7.14E-07	1E-02		**8E-09**
TETRACHLOROETHENE	127-18-4	5.00E-01	N	7.09E-06	5.12E-06	6E-03	**1E-03**	**9E-04**	7.14E-07	2E-03		**2E-09**
TRICHLOROETHENE	79-01-6	5.00E-01	N	7.09E-06	5.12E-06	5E-04	**1E-02**	**1E-02**	M	TCE	M	**5E-08**
1,4-DIOXANE	123-91-1	2.50E-01	N	3.55E-06	2.56E-06	3E-02	**1E-04**	**9E-05**	3.57E-07	1E-01		**4E-08**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	5.50E+00	N	7.80E-05	5.63E-05	2E-02	**4E-03**	**3E-03**	7.86E-06	1E-02		**1E-07**
						Total Ingestion:	**5E-02**	**4E-02**				**3E-07**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	CTE child	CTE adult		CTE lifetime
HIFnc (cm^2-event/kg/d)	2.61E+02	1.47E+02	HIFc (cm^2-event/kg/d)	2.22E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				DAD (mg/kg/d)		Dermal RfD (mg/kg/d)	Hazard Quotient		DAD (mg/kg/d)	Dermal SF (mg/kg/d)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E-05	N	1.16E-05	7.54E-06	5E-03	**2E-03**	**2E-03**	1.10E-06	-		---
BENZENE	71-43-2	1.30E-07	Y	5.50E-07	3.57E-07	4E-03	**1E-04**	**9E-05**	5.21E-08	6E-02		**3E-09**
BROMODICHLOROMETHANE	75-27-4	5.00E-07	N	9.93E-07	6.44E-07	8E-03	**1E-04**	**8E-05**	9.40E-08	6E-02		**6E-09**
CHLOROFORM	67-66-3	1.70E-07	Y	4.30E-07	2.79E-07	1E-02	**4E-05**	**3E-05**	4.08E-08	3E-02		**1E-09**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-07	N	1.76E-06	1.14E-06	2E-03	**9E-04**	**6E-04**	1.67E-07	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-07	N	9.50E-07	6.16E-07	2E-02	**5E-05**	**3E-05**	9.00E-08	8E-02		**8E-09**
ETHYLBENZENE	100-41-4	5.00E-07	N	8.39E-06	5.44E-06	5E-02	**2E-04**	**1E-04**	7.95E-07	1E-02		**9E-09**
TETRACHLOROETHENE	127-18-4	5.00E-07	N	8.35E-06	5.42E-06	6E-03	**1E-03**	**9E-04**	7.91E-07	2E-03		**2E-09**
TRICHLOROETHENE	79-01-6	5.00E-07	N	2.32E-06	1.51E-06	5E-04	**5E-03**	**3E-03**	M	TCE	M	**1E-08**
1,4-DIOXANE	123-91-1	2.50E-07	N	2.52E-08	1.63E-08	3E-02	**8E-07**	**5E-07**	2.38E-09	1E-01		**2E-10**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA [a]		---	---	2E-02	**---**	**---**	---	1E-02		**---**
						Total Dermal:	**1E-02**	**6E-03**				**4E-08**

[a] Not assessed quantitatively per RAGS Part E because partition coefficients are outside the effective prediction domain (EPD)

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-08C**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	CTE child	CTE adult		CTE lifetime
HIFnc (mg-L/ug-m^3)	1.48E-05	1.48E-05	HIFc (mg-L/ug-m^3)	1.55E-06

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				EC (mg/m^3)		Inhalation RfC (mg/m^3)	Hazard Quotient		EC (ug/m^3)	Inhalation IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	1.48E-04	1.48E-04	3E-02	**5E-03**	**5E-03**	1.55E-02	-		---
BENZENE	71-43-2	1.30E-01	Y	1.93E-06	1.93E-06	3E-02	**6E-05**	**6E-05**	2.01E-04	8E-06		**2E-09**
BROMODICHLOROMETHANE	75-27-4	5.00E-01	N	7.41E-06	7.41E-06	-	---	---	7.73E-04	4E-05		**3E-08**
CHLOROFORM	67-66-3	1.70E-01	Y	2.52E-06	2.52E-06	1E-01	**3E-05**	**3E-05**	2.63E-04	2E-05		**6E-09**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	7.41E-06	7.41E-06	-	---	---	7.73E-04	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	7.41E-06	7.41E-06	-	---	---	7.73E-04	-		---
ETHYLBENZENE	100-41-4	5.00E-01	N	7.41E-06	7.41E-06	1E+00	**7E-06**	**7E-06**	7.73E-04	3E-06		**2E-09**
TETRACHLOROETHENE	127-18-4	5.00E-01	N	7.41E-06	7.41E-06	4E-02	**2E-04**	**2E-04**	7.73E-04	3E-07		**2E-10**
TRICHLOROETHENE	79-01-6	5.00E-01	N	7.41E-06	7.41E-06	2E-03	**4E-03**	**4E-03**	M	TCE	M	**3E-09**
1,4-DIOXANE	123-91-1	2.50E-01	N	3.71E-06	3.71E-06	3E-02	**1E-04**	**1E-04**	3.86E-04	5E-06		**2E-09**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	Not a Volatile COPC		---	---	-	---	---	---	2E-06		---
						Total Inhalation:	**9E-03**	**9E-03**				**4E-08**

		HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential MW-08C	**Total Ingestion**	**5E-02**	**4E-02**	**3E-07**
	Total Dermal Contact	**1E-02**	**6E-03**	**4E-08**
	Total Inhalation	**9E-03**	**9E-03**	**4E-08**
	ALL PATHWAYS	**7E-02**	**5E-02**	**4E-07**
	Based on NDs only	**7E-02**	**5E-02**	**4E-07**
	Based on Detects only	**1E-03**	**7E-04**	**3E-08**
	Site-related only	**3E-02**	**2E-02**	**1E-07**

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**MW-08C**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	CTE child	CTE adult
HIFc (L/kg BW/day)	4.05E-04	1.02E-03

COPC	CASRN	EPCmax GW (mg/L)	Daily Intake (mg/kg/day)				Oral SF $(mg/kg/day)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.0005	6.76E-07	4.05E-07	7.68E-07	2.56E-07	9.3E-03	kidney	6E-09	4E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	0.0005	2.03E-07		5.12E-07		3.7E-02	NHL+liver	7E-09		2E-08		**3E-08**
												Total Ingestion:	**5E-08**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	CTE child	CTE adult
HIFc (cm^2-event/kg/d)	7.45E+00	1.47E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	DAD (mg/kg/d)				Dermal SF $(mg/kg/d)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	5.00E-07	2.21E-07	1.33E-07	2.26E-07	7.53E-08	9.3E-03	kidney	2E-09	1E-09	2E-09	7E-10	**6E-09**
TRICHLOROETHENE	79-01-6	5.00E-07	6.64E-08		1.51E-07		3.7E-02	NHL+liver	2E-09		6E-09		**8E-09**
												Total Dermal:	**1E-08**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	CTE child	CTE adult
HIFc (mg-L/ug-m^3)	4.24E-07	4.24E-07

COPC	CASRN	EPCmax GW (ug/L)	Exp. Conc. (ug/m^3)				Inhalation IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.5	7.06E-04	4.24E-04	3.18E-04	1.06E-04	1.0E-06	kidney	7E-10	4E-10	3E-10	1E-10	**2E-09**
TRICHLOROETHENE	79-01-6	0.5	2.12E-04		2.12E-04		3.1E-06	NHL+liver	7E-10		7E-10		**1E-09**
												Total Inhalation:	**3E-09**

NHL = non-Hodkins lymphoma

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-13L**

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	CTE child	CTE adult		CTE lifetime
HIFnc (L/kg BW/day)	1.42E-02	1.02E-02	HIFc (L/kg BW/day)	1.43E-03

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Daily Intake (mg/kg/day)		Oral RfD (mg/kg/day)	Hazard Quotient		Daily Intake (mg/kg/day)	SFo (mg/kg/day)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	1.42E-04	1.02E-04	5E-03	**3E-02**	**2E-02**	1.43E-05	-		---
BENZENE	71-43-2	5.00E-01	N	7.09E-06	5.12E-06	4E-03	**2E-03**	**1E-03**	7.14E-07	6E-02		**4E-08**
BROMODICHLOROMETHANE	75-27-4	2.20E-01	Y	3.12E-06	2.25E-06	8E-03	**4E-04**	**3E-04**	3.14E-07	6E-02		**2E-08**
CHLOROFORM	67-66-3	2.20E+00	Y	3.12E-05	2.25E-05	1E-02	**3E-03**	**2E-03**	3.14E-06	3E-02		**1E-07**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	Y	7.09E-06	5.12E-06	2E-03	**4E-03**	**3E-03**	7.14E-07	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	7.09E-06	5.12E-06	2E-02	**4E-04**	**3E-04**	7.14E-07	8E-02		**6E-08**
ETHYLBENZENE	100-41-4	5.00E-01	N	7.09E-06	5.12E-06	5E-02	**1E-04**	**1E-04**	7.14E-07	1E-02		**8E-09**
TETRACHLOROETHENE	127-18-4	5.10E+01	Y	7.24E-04	5.22E-04	6E-03	**1E-01**	**9E-02**	7.29E-05	2E-03		**2E-07**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	4.11E-06	2.97E-06	5E-04	**8E-03**	**6E-03**	M	TCE	M	**3E-08**
1,4-DIOXANE	123-91-1	2.10E-01	N	2.98E-06	2.15E-06	3E-02	**1E-04**	**7E-05**	3.00E-07	1E-01		**3E-08**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA	NA	---	---	2E-02	---	---	---	1E-02		---
						Total Ingestion:	**2E-01**	**1E-01**				**4E-07**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	CTE child	CTE adult		CTE lifetime
HIFnc (cm^2-event/kg/d)	2.61E+02	1.47E+02	HIFc (cm^2-event/kg/d)	2.22E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				DAD (mg/kg/d)		Dermal RfD (mg/kg/d)	Hazard Quotient		DAD (mg/kg/d)	Dermal SF (mg/kg/d)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E-05	N	1.16E-05	7.54E-06	5E-03	**2E-03**	**2E-03**	1.10E-06	-		---
BENZENE	71-43-2	5.00E-07	N	2.12E-06	1.37E-06	4E-03	**5E-04**	**3E-04**	2.01E-07	6E-02		**1E-08**
BROMODICHLOROMETHANE	75-27-4	2.20E-07	Y	4.37E-07	2.83E-07	8E-03	**5E-05**	**4E-05**	4.14E-08	6E-02		**3E-09**
CHLOROFORM	67-66-3	2.20E-06	Y	5.57E-06	3.61E-06	1E-02	**6E-04**	**4E-04**	5.28E-07	3E-02		**2E-08**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-07	Y	1.76E-06	1.14E-06	2E-03	**9E-04**	**6E-04**	1.67E-07	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-07	N	9.50E-07	6.16E-07	2E-02	**5E-05**	**3E-05**	9.00E-08	8E-02		**8E-09**
ETHYLBENZENE	100-41-4	5.00E-07	N	8.39E-06	5.44E-06	5E-02	**2E-04**	**1E-04**	7.95E-07	1E-02		**9E-09**
TETRACHLOROETHENE	127-18-4	5.10E-05	Y	8.52E-04	5.52E-04	6E-03	**1E-01**	**9E-02**	8.07E-05	2E-03		**2E-07**
TRICHLOROETHENE	79-01-6	2.90E-07	Y	1.35E-06	8.74E-07	5E-04	**3E-03**	**2E-03**	M	TCE	M	**8E-09**
1,4-DIOXANE	123-91-1	2.10E-07	N	2.11E-08	1.37E-08	3E-02	**7E-07**	**5E-07**	2.00E-09	1E-01		**2E-10**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA [a]		---	---	2E-02	---	---	---	1E-02		---
						Total Dermal:	**1E-01**	**1E-01**				**2E-07**

[a] Not assessed quantitatively per RAGS Part E because partition coefficients are outside the effective prediction domain (EPD)

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-13L**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	CTE child	CTE adult		CTE lifetime
HIFnc (mg-L/ug-m^3)	1.48E-05	1.48E-05	HIFc (mg-L/ug-m^3)	1.55E-06

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				EC (mg/m^3)		Inhalation RfC (mg/m^3)	Hazard Quotient		EC (ug/m^3)	Inhalation IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	1.48E-04	1.48E-04	3E-02	**5E-03**	**5E-03**	1.55E-02	-		---
BENZENE	71-43-2	5.00E-01	N	7.41E-06	7.41E-06	3E-02	**2E-04**	**2E-04**	7.73E-04	8E-06		**6E-09**
BROMODICHLOROMETHANE	75-27-4	2.20E-01	Y	3.26E-06	3.26E-06	-	---	---	3.40E-04	4E-05		**1E-08**
CHLOROFORM	67-66-3	2.20E+00	Y	3.26E-05	3.26E-05	1E-01	**3E-04**	**3E-04**	3.40E-03	2E-05		**8E-08**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	Y	7.41E-06	7.41E-06	-	---	---	7.73E-04	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	7.41E-06	7.41E-06	-	---	---	7.73E-04	-		---
ETHYLBENZENE	100-41-4	5.00E-01	N	7.41E-06	7.41E-06	1E+00	**7E-06**	**7E-06**	7.73E-04	3E-06		**2E-09**
TETRACHLOROETHENE	127-18-4	5.10E+01	Y	7.56E-04	7.56E-04	4E-02	**2E-02**	**2E-02**	7.88E-02	3E-07		**2E-08**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	4.30E-06	4.30E-06	2E-03	**2E-03**	**2E-03**	M	TCE	M	**2E-09**
1,4-DIOXANE	123-91-1	2.10E-01	N	3.11E-06	3.11E-06	3E-02	**1E-04**	**1E-04**	3.25E-04	5E-06		**2E-09**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	Not a Volatile COPC		---	---	-	---	---	---	2E-06		---
						Total Inhalation:	**3E-02**	**3E-02**				**1E-07**

		HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential MW-13L	**Total Ingestion**	**2E-01**	**1E-01**	**4E-07**
	Total Dermal Contact	**1E-01**	**1E-01**	**2E-07**
	Total Inhalation	**3E-02**	**3E-02**	**1E-07**
	ALL PATHWAYS	**3E-01**	**2E-01**	**8E-07**
	Based on NDs only	**4E-02**	**3E-02**	**2E-07**
	Based on Detects only	**3E-01**	**2E-01**	**6E-07**
	Site-related only	**3E-01**	**2E-01**	**4E-07**

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**MW-13L**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	CTE child	CTE adult
HIFc (L/kg BW/day)	4.05E-04	1.02E-03

COPC	CASRN	EPCmax GW (mg/L)	Daily Intake (mg/kg/day)				Oral SF $(mg/kg/day)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.00029	3.92E-07	2.35E-07	4.45E-07	1.48E-07	9.3E-03	kidney	4E-09	2E-09	4E-09	1E-09	**1E-08**
TRICHLOROETHENE	79-01-6	0.00029	1.18E-07		2.97E-07		3.7E-02	NHL+liver	4E-09		1E-08		**2E-08**
												Total Ingestion:	**3E-08**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	CTE child	CTE adult
HIFc (cm^2-event/kg/d)	7.45E+00	1.47E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	DAD (mg/kg/d)				Dermal SF $(mg/kg/d)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	2.90E-07	1.28E-07	7.70E-08	1.31E-07	4.37E-08	9.3E-03	kidney	1E-09	7E-10	1E-09	4E-10	**4E-09**
TRICHLOROETHENE	79-01-6	2.90E-07	3.85E-08		8.74E-08		3.7E-02	NHL+liver	1E-09		3E-09		**5E-09**
												Total Dermal:	**8E-09**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	CTE child	CTE adult
HIFc (mg-L/ug-m^3)	4.24E-07	4.24E-07

COPC	CASRN	EPCmax GW (ug/L)	Exp. Conc. (ug/m^3)				Inhalation IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.29	4.09E-04	2.46E-04	1.84E-04	6.14E-05	1.0E-06	kidney	4E-10	2E-10	2E-10	6E-11	**9E-10**
TRICHLOROETHENE	79-01-6	0.29	1.23E-04		1.23E-04		3.1E-06	NHL+liver	4E-10		4E-10		**8E-10**
												Total Inhalation:	**2E-09**

NHL = non-Hodkins lymphoma

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-34C**

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	CTE child	CTE adult		CTE lifetime
HIFnc (L/kg BW/day)	1.42E-02	1.02E-02	HIFc (L/kg BW/day)	1.43E-03

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Daily Intake (mg/kg/day)		Oral RfD (mg/kg/day)	Hazard Quotient		Daily Intake (mg/kg/day)	SFo $(mg/kg/day)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	1.42E-04	1.02E-04	5E-03	**3E-02**	**2E-02**	1.43E-05	-		---
BENZENE	71-43-2	5.00E-01	N	7.09E-06	5.12E-06	4E-03	**2E-03**	**1E-03**	7.14E-07	6E-02		**4E-08**
BROMODICHLOROMETHANE	75-27-4	5.00E-01	N	7.09E-06	5.12E-06	8E-03	**9E-04**	**6E-04**	7.14E-07	6E-02		**4E-08**
CHLOROFORM	67-66-3	5.00E-01	N	7.09E-06	5.12E-06	1E-02	**7E-04**	**5E-04**	7.14E-07	3E-02		**2E-08**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	7.09E-06	5.12E-06	2E-03	**4E-03**	**3E-03**	7.14E-07	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	7.09E-06	5.12E-06	2E-02	**4E-04**	**3E-04**	7.14E-07	8E-02		**6E-08**
ETHYLBENZENE	100-41-4	5.00E-01	N	7.09E-06	5.12E-06	5E-02	**1E-04**	**1E-04**	7.14E-07	1E-02		**8E-09**
TETRACHLOROETHENE	127-18-4	5.00E-01	N	7.09E-06	5.12E-06	6E-03	**1E-03**	**9E-04**	7.14E-07	2E-03		**2E-09**
TRICHLOROETHENE	79-01-6	5.00E-01	N	7.09E-06	5.12E-06	5E-04	**1E-02**	**1E-02**	M	TCE	M	**5E-08**
1,4-DIOXANE	123-91-1	2.05E-01	N	2.91E-06	2.10E-06	3E-02	**1E-04**	**7E-05**	2.93E-07	1E-01		**3E-08**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA	NA	---	---	2E-02	---	---	---	1E-02		---
						Total Ingestion:	**5E-02**	**4E-02**				**3E-07**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	CTE child	CTE adult		CTE lifetime
HIFnc (cm^2-event/kg/d)	2.61E+02	1.47E+02	HIFc (cm^2-event/kg/d)	2.22E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				DAD (mg/kg/d)		Dermal RfD (mg/kg/d)	Hazard Quotient		DAD (mg/kg/d)	Dermal SF $(mg/kg/d)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E-05	N	1.16E-05	7.54E-06	5E-03	**2E-03**	**2E-03**	1.10E-06	-		---
BENZENE	71-43-2	5.00E-07	N	2.12E-06	1.37E-06	4E-03	**5E-04**	**3E-04**	2.01E-07	6E-02		**1E-08**
BROMODICHLOROMETHANE	75-27-4	5.00E-07	N	9.93E-07	6.44E-07	8E-03	**1E-04**	**8E-05**	9.40E-08	6E-02		**6E-09**
CHLOROFORM	67-66-3	5.00E-07	N	1.27E-06	8.21E-07	1E-02	**1E-04**	**8E-05**	1.20E-07	3E-02		**4E-09**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-07	N	1.76E-06	1.14E-06	2E-03	**9E-04**	**6E-04**	1.67E-07	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-07	N	9.50E-07	6.16E-07	2E-02	**5E-05**	**3E-05**	9.00E-08	8E-02		**8E-09**
ETHYLBENZENE	100-41-4	5.00E-07	N	8.39E-06	5.44E-06	5E-02	**2E-04**	**1E-04**	7.95E-07	1E-02		**9E-09**
TETRACHLOROETHENE	127-18-4	5.00E-07	N	8.35E-06	5.42E-06	6E-03	**1E-03**	**9E-04**	7.91E-07	2E-03		**2E-09**
TRICHLOROETHENE	79-01-6	5.00E-07	N	2.32E-06	1.51E-06	5E-04	**5E-03**	**3E-03**	M	TCE	M	**1E-08**
1,4-DIOXANE	123-91-1	2.05E-07	N	2.06E-08	1.34E-08	3E-02	**7E-07**	**4E-07**	1.96E-09	1E-01		**2E-10**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA [a]		---	---	2E-02	---	---	---	1E-02		---
						Total Dermal:	**1E-02**	**7E-03**				**5E-08**

[a] Not assessed quantitatively per RAGS Part E because partition coefficients are outside the effective prediction domain (EPD)

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-34C**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	CTE child	CTE adult		CTE lifetime
HIFnc (mg-L/ug-m^3)	1.48E-05	1.48E-05	HIFc (mg-L/ug-m^3)	1.55E-06

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				EC (mg/m^3)		Inhalation RfC (mg/m^3)	Hazard Quotient		EC (ug/m^3)	Inhalation IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	1.48E-04	1.48E-04	3E-02	**5E-03**	**5E-03**	1.55E-02	-		---
BENZENE	71-43-2	5.00E-01	N	7.41E-06	7.41E-06	3E-02	**2E-04**	**2E-04**	7.73E-04	8E-06		**6E-09**
BROMODICHLOROMETHANE	75-27-4	5.00E-01	N	7.41E-06	7.41E-06	-	---	---	7.73E-04	4E-05		**3E-08**
CHLOROFORM	67-66-3	5.00E-01	N	7.41E-06	7.41E-06	1E-01	**8E-05**	**8E-05**	7.73E-04	2E-05		**2E-08**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	7.41E-06	7.41E-06	-	---	---	7.73E-04	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	7.41E-06	7.41E-06	-	---	---	7.73E-04	-		---
ETHYLBENZENE	100-41-4	5.00E-01	N	7.41E-06	7.41E-06	1E+00	**7E-06**	**7E-06**	7.73E-04	3E-06		**2E-09**
TETRACHLOROETHENE	127-18-4	5.00E-01	N	7.41E-06	7.41E-06	4E-02	**2E-04**	**2E-04**	7.73E-04	3E-07		**2E-10**
TRICHLOROETHENE	79-01-6	5.00E-01	N	7.41E-06	7.41E-06	2E-03	**4E-03**	**4E-03**	M	TCE	M	**3E-09**
1,4-DIOXANE	123-91-1	2.05E-01	N	3.04E-06	3.04E-06	3E-02	**1E-04**	**1E-04**	3.17E-04	5E-06		**2E-09**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	Not a Volatile COPC		---	---	-	---	---	---	2E-06		---
						Total Inhalation:	**9E-03**	**9E-03**				**6E-08**

		HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential MW-34C	**Total Ingestion**	**5E-02**	**4E-02**	**3E-07**
	Total Dermal Contact	**1E-02**	**7E-03**	**5E-08**
	Total Inhalation	**9E-03**	**9E-03**	**6E-08**
	ALL PATHWAYS	**7E-02**	**5E-02**	**4E-07**
	Based on NDs only	**7E-02**	**5E-02**	**4E-07**
	Based on Detects only	**All ND**	**All ND**	**All ND**
	Site-related only	**3E-02**	**2E-02**	**1E-07**

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**MW-34C**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	CTE child	CTE adult
HIFc (L/kg BW/day)	4.05E-04	1.02E-03

COPC	CASRN	EPCmax GW (mg/L)	Daily Intake (mg/kg/day)				Oral SF $(mg/kg/day)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.0005	6.76E-07	4.05E-07	7.68E-07	2.56E-07	9.3E-03	kidney	6E-09	4E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	0.0005	2.03E-07		5.12E-07		3.7E-02	NHL+liver	7E-09		2E-08		**3E-08**
												Total Ingestion:	**5E-08**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	CTE child	CTE adult
HIFc (cm^2-event/kg/d)	7.45E+00	1.47E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	DAD (mg/kg/d)				Dermal SF $(mg/kg/d)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	5.00E-07	2.21E-07	1.33E-07	2.26E-07	7.53E-08	9.3E-03	kidney	2E-09	1E-09	2E-09	7E-10	**6E-09**
TRICHLOROETHENE	79-01-6	5.00E-07	6.64E-08		1.51E-07		3.7E-02	NHL+liver	2E-09		6E-09		**8E-09**
												Total Dermal:	**1E-08**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	CTE child	CTE adult
HIFc (mg-L/ug-m^3)	4.24E-07	4.24E-07

COPC	CASRN	EPCmax GW (ug/L)	Exp. Conc. (ug/m^3)				Inhalation IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.5	7.06E-04	4.24E-04	3.18E-04	1.06E-04	1.0E-06	kidney	7E-10	4E-10	3E-10	1E-10	**2E-09**
TRICHLOROETHENE	79-01-6	0.5	2.12E-04		2.12E-04		3.1E-06	NHL+liver	7E-10		7E-10		**1E-09**
												Total Inhalation:	**3E-09**

NHL = non-Hodkins lymphoma

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-34D**

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	CTE child	CTE adult		CTE lifetime
HIFnc (L/kg BW/day)	1.42E-02	1.02E-02	HIFc (L/kg BW/day)	1.43E-03

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Daily Intake (mg/kg/day)		Oral RfD (mg/kg/day)	Hazard Quotient		Daily Intake (mg/kg/day)	SFo $(mg/kg/day)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	1.42E-04	1.02E-04	5E-03	**3E-02**	**2E-02**	1.43E-05	-		---
BENZENE	71-43-2	5.00E-01	N	7.09E-06	5.12E-06	4E-03	**2E-03**	**1E-03**	7.14E-07	6E-02		**4E-08**
BROMODICHLOROMETHANE	75-27-4	5.00E-01	N	7.09E-06	5.12E-06	8E-03	**9E-04**	**6E-04**	7.14E-07	6E-02		**4E-08**
CHLOROFORM	67-66-3	5.00E-01	N	7.09E-06	5.12E-06	1E-02	**7E-04**	**5E-04**	7.14E-07	3E-02		**2E-08**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	7.09E-06	5.12E-06	2E-03	**4E-03**	**3E-03**	7.14E-07	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	7.09E-06	5.12E-06	2E-02	**4E-04**	**3E-04**	7.14E-07	8E-02		**6E-08**
ETHYLBENZENE	100-41-4	5.00E-01	N	7.09E-06	5.12E-06	5E-02	**1E-04**	**1E-04**	7.14E-07	1E-02		**8E-09**
TETRACHLOROETHENE	127-18-4	5.00E-01	N	7.09E-06	5.12E-06	6E-03	**1E-03**	**9E-04**	7.14E-07	2E-03		**2E-09**
TRICHLOROETHENE	79-01-6	5.00E-01	N	7.09E-06	5.12E-06	5E-04	**1E-02**	**1E-02**	M	TCE	M	**5E-08**
1,4-DIOXANE	123-91-1	2.10E-01	N	2.98E-06	2.15E-06	3E-02	**1E-04**	**7E-05**	3.00E-07	1E-01		**3E-08**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA	NA	---	---	2E-02	---	---	---	1E-02		---
						Total Ingestion:	**5E-02**	**4E-02**				**3E-07**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	CTE child	CTE adult		CTE lifetime
HIFnc (cm^2-event/kg/d)	2.61E+02	1.47E+02	HIFc (cm^2-event/kg/d)	2.22E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				DAD (mg/kg/d)		Dermal RfD (mg/kg/d)	Hazard Quotient		DAD (mg/kg/d)	Dermal SF $(mg/kg/d)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E-05	N	1.16E-05	7.54E-06	5E-03	**2E-03**	**2E-03**	1.10E-06	-		---
BENZENE	71-43-2	5.00E-07	N	2.12E-06	1.37E-06	4E-03	**5E-04**	**3E-04**	2.01E-07	6E-02		**1E-08**
BROMODICHLOROMETHANE	75-27-4	5.00E-07	N	9.93E-07	6.44E-07	8E-03	**1E-04**	**8E-05**	9.40E-08	6E-02		**6E-09**
CHLOROFORM	67-66-3	5.00E-07	N	1.27E-06	8.21E-07	1E-02	**1E-04**	**8E-05**	1.20E-07	3E-02		**4E-09**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-07	N	1.76E-06	1.14E-06	2E-03	**9E-04**	**6E-04**	1.67E-07	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-07	N	9.50E-07	6.16E-07	2E-02	**5E-05**	**3E-05**	9.00E-08	8E-02		**8E-09**
ETHYLBENZENE	100-41-4	5.00E-07	N	8.39E-06	5.44E-06	5E-02	**2E-04**	**1E-04**	7.95E-07	1E-02		**9E-09**
TETRACHLOROETHENE	127-18-4	5.00E-07	N	8.35E-06	5.42E-06	6E-03	**1E-03**	**9E-04**	7.91E-07	2E-03		**2E-09**
TRICHLOROETHENE	79-01-6	5.00E-07	N	2.32E-06	1.51E-06	5E-04	**5E-03**	**3E-03**	M	TCE	M	**1E-08**
1,4-DIOXANE	123-91-1	2.10E-07	N	2.11E-08	1.37E-08	3E-02	**7E-07**	**5E-07**	2.00E-09	1E-01		**2E-10**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA [a]		---	---	2E-02	---	---	---	1E-02		---
						Total Dermal:	**1E-02**	**7E-03**				**5E-08**

[a] Not assessed quantitatively per RAGS Part E because partition coefficients are outside the effective prediction domain (EPD)

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-34D**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	CTE child	CTE adult		CTE lifetime
HIFnc (mg-L/ug-m^3)	1.48E-05	1.48E-05	HIFc (mg-L/ug-m^3)	1.55E-06

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				EC (mg/m^3)		Inhalation RfC (mg/m^3)	Hazard Quotient		EC (ug/m^3)	Inhalation IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	1.48E-04	1.48E-04	3E-02	**5E-03**	**5E-03**	1.55E-02	-		---
BENZENE	71-43-2	5.00E-01	N	7.41E-06	7.41E-06	3E-02	**2E-04**	**2E-04**	7.73E-04	8E-06		**6E-09**
BROMODICHLOROMETHANE	75-27-4	5.00E-01	N	7.41E-06	7.41E-06	-	---	---	7.73E-04	4E-05		**3E-08**
CHLOROFORM	67-66-3	5.00E-01	N	7.41E-06	7.41E-06	1E-01	**8E-05**	**8E-05**	7.73E-04	2E-05		**2E-08**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	7.41E-06	7.41E-06	-	---	---	7.73E-04	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	7.41E-06	7.41E-06	-	---	---	7.73E-04	-		---
ETHYLBENZENE	100-41-4	5.00E-01	N	7.41E-06	7.41E-06	1E+00	**7E-06**	**7E-06**	7.73E-04	3E-06		**2E-09**
TETRACHLOROETHENE	127-18-4	5.00E-01	N	7.41E-06	7.41E-06	4E-02	**2E-04**	**2E-04**	7.73E-04	3E-07		**2E-10**
TRICHLOROETHENE	79-01-6	5.00E-01	N	7.41E-06	7.41E-06	2E-03	**4E-03**	**4E-03**	M	TCE	M	**3E-09**
1,4-DIOXANE	123-91-1	2.10E-01	N	3.11E-06	3.11E-06	3E-02	**1E-04**	**1E-04**	3.25E-04	5E-06		**2E-09**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	Not a Volatile COPC		---	---	-	---	---	---	2E-06		---
						Total Inhalation:	**9E-03**	**9E-03**				**6E-08**

		HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential MW-34D	**Total Ingestion**	**5E-02**	**4E-02**	**3E-07**
	Total Dermal Contact	**1E-02**	**7E-03**	**5E-08**
	Total Inhalation	**9E-03**	**9E-03**	**6E-08**
	ALL PATHWAYS	**7E-02**	**5E-02**	**4E-07**
	Based on NDs only	**7E-02**	**5E-02**	**4E-07**
	Based on Detects only	**All ND**	**All ND**	**All ND**
	Site-related only	**3E-02**	**2E-02**	**1E-07**

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**MW-34D**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	CTE child	CTE adult
HIFc (L/kg BW/day)	4.05E-04	1.02E-03

COPC	CASRN	EPCmax GW (mg/L)	Daily Intake (mg/kg/day)				Oral SF (mg/kg/day)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.0005	6.76E-07	4.05E-07	7.68E-07	2.56E-07	9.3E-03	kidney	6E-09	4E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	0.0005	2.03E-07		5.12E-07		3.7E-02	NHL+liver	7E-09		2E-08		**3E-08**
												Total Ingestion:	**5E-08**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	CTE child	CTE adult
HIFc (cm^2-event/kg/d)	7.45E+00	1.47E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	DAD (mg/kg/d)				Dermal SF (mg/kg/d)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	5.00E-07	2.21E-07	1.33E-07	2.26E-07	7.53E-08	9.3E-03	kidney	2E-09	1E-09	2E-09	7E-10	**6E-09**
TRICHLOROETHENE	79-01-6	5.00E-07	6.64E-08		1.51E-07		3.7E-02	NHL+liver	2E-09		6E-09		**8E-09**
												Total Dermal:	**1E-08**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	CTE child	CTE adult
HIFc (mg-L/ug-m^3)	4.24E-07	4.24E-07

COPC	CASRN	EPCmax GW (ug/L)	Exp. Conc. (ug/m^3)				Inhalation IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.5	7.06E-04	4.24E-04	3.18E-04	1.06E-04	1.0E-06	kidney	7E-10	4E-10	3E-10	1E-10	**2E-09**
TRICHLOROETHENE	79-01-6	0.5	2.12E-04		2.12E-04		3.1E-06	NHL+liver	7E-10		7E-10		**1E-09**
												Total Inhalation:	**3E-09**

NHL = non-Hodkins lymphoma

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-01D**

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	RME child	RME adult		RME lifetime
HIFnc (L/kg BW/day)	4.99E-02	3.00E-02	HIFc (L/kg BW/day)	1.28E-02

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Daily Intake (mg/kg/day)		Oral RfD (mg/kg/day)	Hazard Quotient		Daily Intake (mg/kg/day)	SFo (mg/kg/day)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	4.99E-04	3.00E-04	5E-03	**1E-01**	**6E-02**	1.28E-04	-		---
BENZENE	71-43-2	5.00E-01	N	2.49E-05	1.50E-05	4E-03	**6E-03**	**4E-03**	6.42E-06	6E-02		**4E-07**
BROMODICHLOROMETHANE	75-27-4	5.00E-01	N	2.49E-05	1.50E-05	8E-03	**3E-03**	**2E-03**	6.42E-06	6E-02		**4E-07**
CHLOROFORM	67-66-3	2.20E-01	Y	1.10E-05	6.59E-06	1E-02	**1E-03**	**7E-04**	2.82E-06	3E-02		**9E-08**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	2.49E-05	1.50E-05	2E-03	**1E-02**	**7E-03**	6.42E-06	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	2.49E-05	1.50E-05	2E-02	**1E-03**	**7E-04**	6.42E-06	8E-02		**5E-07**
ETHYLBENZENE	100-41-4	2.60E-01	Y	1.30E-05	7.79E-06	5E-02	**3E-04**	**2E-04**	3.34E-06	1E-02		**4E-08**
TETRACHLOROETHENE	127-18-4	9.10E+00	Y	4.54E-04	2.73E-04	6E-03	**8E-02**	**5E-02**	1.17E-04	2E-03		**2E-07**
TRICHLOROETHENE	79-01-6	1.60E-01	Y	7.98E-06	4.79E-06	5E-04	**2E-02**	**1E-02**	M	TCE	M	**1E-07**
1,4-DIOXANE	123-91-1	5.00E+00	N	2.49E-04	1.50E-04	3E-02	**8E-03**	**5E-03**	6.42E-05	1E-01		**6E-06**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	1.10E+01	Y	5.48E-04	3.30E-04	2E-02	**3E-02**	**2E-02**	1.41E-04	1E-02		**2E-06**
						Total Ingestion:	**3E-01**	**2E-01**				**1E-05**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	RME child	RME adult		RME lifetime
HIFnc (cm^2-event/kg/d)	4.07E+02	2.36E+02	HIFc (cm^2-event/kg/d)	1.02E+02

COPC	CASRN	EPCmax GW (mg/cm^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				DAD (mg/kg/d)		Dermal RfD (mg/kg/d)	Hazard Quotient		DAD (mg/kg/d)	Dermal SF (mg/kg/d)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E-05	N	1.82E-05	1.21E-05	5E-03	**4E-03**	**2E-03**	5.07E-06	-		---
BENZENE	71-43-2	5.00E-07	N	3.30E-06	2.19E-06	4E-03	**8E-04**	**5E-04**	9.23E-07	6E-02		**5E-08**
BROMODICHLOROMETHANE	75-27-4	5.00E-07	N	1.55E-06	1.03E-06	8E-03	**2E-04**	**1E-04**	4.33E-07	6E-02		**3E-08**
CHLOROFORM	67-66-3	2.20E-07	Y	8.69E-07	5.77E-07	1E-02	**9E-05**	**6E-05**	2.43E-07	3E-02		**8E-09**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-07	N	2.75E-06	1.83E-06	2E-03	**1E-03**	**9E-04**	7.69E-07	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-07	N	1.48E-06	9.84E-07	2E-02	**7E-05**	**5E-05**	4.14E-07	8E-02		**3E-08**
ETHYLBENZENE	100-41-4	2.60E-07	Y	6.81E-06	4.52E-06	5E-02	**1E-04**	**9E-05**	1.90E-06	1E-02		**2E-08**
TETRACHLOROETHENE	127-18-4	9.10E-06	Y	2.37E-04	1.57E-04	6E-03	**4E-02**	**3E-02**	6.63E-05	2E-03		**1E-07**
TRICHLOROETHENE	79-01-6	1.60E-07	Y	1.16E-06	7.70E-07	5E-04	**2E-03**	**2E-03**	M	TCE	M	**2E-08**
1,4-DIOXANE	123-91-1	5.00E-06	N	7.86E-07	5.22E-07	3E-02	**3E-05**	**2E-05**	2.20E-07	1E-01		**2E-08**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA [a]		---	---	2E-02	**---**	**---**	---	1E-02		**---**
						Total Dermal:	**5E-02**	**3E-02**				**3E-07**

[a] Not assessed quantitatively per RAGS Part E because partition coefficients are outside the effective prediction domain (EPD)

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-01D**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	RME child	RME adult		RME lifetime
HIFnc (mg-L/ug-m^3)	4.79E-04	4.79E-04	HIFc (mg-L/ug-m^3)	1.78E-04

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				EC (mg/m^3)		Inhalation RfC (mg/m^3)	Hazard Quotient		EC (ug/m^3)	Inhalation IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	4.79E-03	4.79E-03	3E-02	**2E-01**	**2E-01**	1.78E+00	-		---
BENZENE	71-43-2	5.00E-01	N	2.40E-04	2.40E-04	3E-02	**8E-03**	**8E-03**	8.90E-02	8E-06		**7E-07**
BROMODICHLOROMETHANE	75-27-4	5.00E-01	N	2.40E-04	2.40E-04	-	---	---	8.90E-02	4E-05		**3E-06**
CHLOROFORM	67-66-3	2.20E-01	Y	1.05E-04	1.05E-04	1E-01	**1E-03**	**1E-03**	3.92E-02	2E-05		**9E-07**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	2.40E-04	2.40E-04	-	---	---	8.90E-02	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	2.40E-04	2.40E-04	-	---	---	8.90E-02	-		---
ETHYLBENZENE	100-41-4	2.60E-01	Y	1.25E-04	1.25E-04	1E+00	**1E-04**	**1E-04**	4.63E-02	3E-06		**1E-07**
TETRACHLOROETHENE	127-18-4	9.10E+00	Y	4.36E-03	4.36E-03	4E-02	**1E-01**	**1E-01**	1.62E+00	3E-07		**4E-07**
TRICHLOROETHENE	79-01-6	1.60E-01	Y	7.67E-05	7.67E-05	2E-03	**4E-02**	**4E-02**	M	TCE	M	**2E-07**
1,4-DIOXANE	123-91-1	5.00E+00	N	2.40E-03	2.40E-03	3E-02	**8E-02**	**8E-02**	8.90E-01	5E-06		**4E-06**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	Not a Volatile COPC		---	---	-	---	---	---	2E-06		---
						Total Inhalation:	**4E-01**	**4E-01**				**1E-05**

		HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential MW-01D	**Total Ingestion**	**3E-01**	**2E-01**	**1E-05**
	Total Dermal Contact	**5E-02**	**3E-02**	**3E-07**
	Total Inhalation	**4E-01**	**4E-01**	**1E-05**
	ALL PATHWAYS	**7E-01**	**6E-01**	**2E-05**
	Based on NDs only	**4E-01**	**3E-01**	**2E-05**
	Based on Detects only	**3E-01**	**2E-01**	**4E-06**
	Site-related only	**4E-01**	**3E-01**	**1E-05**

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**MW-01D**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	RME child	RME adult
HIFc (L/kg BW/day)	4.27E-03	8.56E-03

COPC	CASRN	EPCmax GW (mg/L)	Daily Intake (mg/kg/day)				Oral SF $(mg/kg/day)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.00016	2.28E-06	1.37E-06	2.05E-06	6.85E-07	9.3E-03	kidney	2E-08	1E-08	2E-08	6E-09	**6E-08**
TRICHLOROETHENE	79-01-6	0.00016	6.84E-07		1.37E-06		3.7E-02	NHL+liver	3E-08		5E-08		**8E-08**
												Total Ingestion:	**1E-07**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	RME child	RME adult
HIFc (cm^2-event/kg/d)	3.49E+01	6.73E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	DAD (mg/kg/d)				Dermal SF $(mg/kg/d)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	1.60E-07	3.31E-07	1.99E-07	3.30E-07	1.10E-07	9.3E-03	kidney	3E-09	2E-09	3E-09	1E-09	**9E-09**
TRICHLOROETHENE	79-01-6	1.60E-07	9.94E-08		2.20E-07		3.7E-02	NHL+liver	4E-09		8E-09		**1E-08**
												Total Dermal:	**2E-08**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	RME child	RME adult
HIFc (mg-L/ug-m^3)	4.11E-05	1.37E-04

COPC	CASRN	EPCmax GW (ug/L)	Exp. Conc. (ug/m^3)				Inhalation IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.16	2.19E-02	1.32E-02	3.29E-02	1.10E-02	1.0E-06	kidney	2E-08	1E-08	3E-08	1E-08	**8E-08**
TRICHLOROETHENE	79-01-6	0.16	6.58E-03		2.19E-02		3.1E-06	NHL+liver	2E-08		7E-08		**9E-08**
												Total Inhalation:	**2E-07**

NHL = non-Hodkins lymphoma

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-03RB**

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	RME child	RME adult		RME lifetime
HIFnc (L/kg BW/day)	4.99E-02	3.00E-02	HIFc (L/kg BW/day)	1.28E-02

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Daily Intake (mg/kg/day)		Oral RfD (mg/kg/day)	Hazard Quotient		Daily Intake (mg/kg/day)	SFo (mg/kg/day)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	4.99E-04	3.00E-04	5E-03	**1E-01**	**6E-02**	1.28E-04	-		**---**
BENZENE	71-43-2	5.00E-01	N	2.49E-05	1.50E-05	4E-03	**6E-03**	**4E-03**	6.42E-06	6E-02		**4E-07**
BROMODICHLOROMETHANE	75-27-4	4.90E-01	Y	2.44E-05	1.47E-05	8E-03	**3E-03**	**2E-03**	6.29E-06	6E-02		**4E-07**
CHLOROFORM	67-66-3	3.80E+00	Y	1.89E-04	1.14E-04	1E-02	**2E-02**	**1E-02**	4.88E-05	3E-02		**2E-06**
CIS-1,2-DICHLOROETHENE	156-59-2	1.50E+00	Y	7.48E-05	4.49E-05	2E-03	**4E-02**	**2E-02**	1.93E-05	-		**---**
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	2.49E-05	1.50E-05	2E-02	**1E-03**	**7E-04**	6.42E-06	8E-02		**5E-07**
ETHYLBENZENE	100-41-4	5.00E-01	N	2.49E-05	1.50E-05	5E-02	**5E-04**	**3E-04**	6.42E-06	1E-02		**7E-08**
TETRACHLOROETHENE	127-18-4	2.30E+02	Y	1.15E-02	6.89E-03	6E-03	**2E+00**	**1E+00**	2.95E-03	2E-03		**6E-06**
TRICHLOROETHENE	79-01-6	2.10E+00	Y	1.05E-04	6.29E-05	5E-04	**2E-01**	**1E-01**	M	TCE	M	**2E-06**
1,4-DIOXANE	123-91-1	2.70E-01	N	1.35E-05	8.09E-06	3E-02	**4E-04**	**3E-04**	3.47E-06	1E-01		**3E-07**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	6.00E+00	N	2.99E-04	1.80E-04	2E-02	**1E-02**	**9E-03**	7.70E-05	1E-02		**1E-06**
						Total Ingestion:	**2E+00**	**1E+00**				**1E-05**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	RME child	RME adult		RME lifetime
HIFnc (cm^2-event/kg/d)	4.07E+02	2.36E+02	HIFc (cm^2-event/kg/d)	1.02E+02

COPC	CASRN	EPCmax GW (mg/cm^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				DAD (mg/kg/d)		Dermal RfD (mg/kg/d)	Hazard Quotient		DAD (mg/kg/d)	Dermal SF (mg/kg/d)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E-05	N	1.82E-05	1.21E-05	5E-03	**4E-03**	**2E-03**	5.07E-06	-		**---**
BENZENE	71-43-2	5.00E-07	N	3.30E-06	2.19E-06	4E-03	**8E-04**	**5E-04**	9.23E-07	6E-02		**5E-08**
BROMODICHLOROMETHANE	75-27-4	4.90E-07	Y	1.52E-06	1.01E-06	8E-03	**2E-04**	**1E-04**	4.24E-07	6E-02		**3E-08**
CHLOROFORM	67-66-3	3.80E-06	Y	1.50E-05	9.97E-06	1E-02	**2E-03**	**1E-03**	4.20E-06	3E-02		**1E-07**
CIS-1,2-DICHLOROETHENE	156-59-2	1.50E-06	Y	8.26E-06	5.48E-06	2E-03	**4E-03**	**3E-03**	2.31E-06	-		**---**
DIBROMOCHLOROMETHANE	124-48-1	5.00E-07	N	1.48E-06	9.84E-07	2E-02	**7E-05**	**5E-05**	4.14E-07	8E-02		**3E-08**
ETHYLBENZENE	100-41-4	5.00E-07	N	1.31E-05	8.69E-06	5E-02	**3E-04**	**2E-04**	3.66E-06	1E-02		**4E-08**
TETRACHLOROETHENE	127-18-4	2.30E-04	Y	6.00E-03	3.98E-03	6E-03	**1E+00**	**7E-01**	1.68E-03	2E-03		**4E-06**
TRICHLOROETHENE	79-01-6	2.10E-06	Y	1.52E-05	1.01E-05	5E-04	**3E-02**	**2E-02**	M	TCE	M	**3E-07**
1,4-DIOXANE	123-91-1	2.70E-07	N	4.24E-08	2.82E-08	3E-02	**1E-06**	**9E-07**	1.19E-08	1E-01		**1E-09**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA [a]		---	---	2E-02	**---**	**---**	---	1E-02		**---**
						Total Dermal:	**1E+00**	**7E-01**				**4E-06**

[a] Not assessed quantitatively per RAGS Part E because partition coefficients are outside the effective prediction domain (EPD)

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-03RB**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	RME child	RME adult		RME lifetime
HIFnc (mg-L/ug-m^3)	4.79E-04	4.79E-04	HIFc (mg-L/ug-m^3)	1.78E-04

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				EC (mg/m^3)		Inhalation RfC (mg/m^3)	Hazard Quotient		EC (ug/m^3)	Inhalation IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	4.79E-03	4.79E-03	3E-02	**2E-01**	**2E-01**	1.78E+00	-		---
BENZENE	71-43-2	5.00E-01	N	2.40E-04	2.40E-04	3E-02	**8E-03**	**8E-03**	8.90E-02	8E-06		**7E-07**
BROMODICHLOROMETHANE	75-27-4	4.90E-01	Y	2.35E-04	2.35E-04	-	---	---	8.73E-02	4E-05		**3E-06**
CHLOROFORM	67-66-3	3.80E+00	Y	1.82E-03	1.82E-03	1E-01	**2E-02**	**2E-02**	6.77E-01	2E-05		**2E-05**
CIS-1,2-DICHLOROETHENE	156-59-2	1.50E+00	Y	7.19E-04	7.19E-04	-	---	---	2.67E-01	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	2.40E-04	2.40E-04	-	---	---	8.90E-02	-		---
ETHYLBENZENE	100-41-4	5.00E-01	N	2.40E-04	2.40E-04	1E+00	**2E-04**	**2E-04**	8.90E-02	3E-06		**2E-07**
TETRACHLOROETHENE	127-18-4	2.30E+02	Y	1.10E-01	1.10E-01	4E-02	**3E+00**	**3E+00**	4.10E+01	3E-07		**1E-05**
TRICHLOROETHENE	79-01-6	2.10E+00	Y	1.01E-03	1.01E-03	2E-03	**5E-01**	**5E-01**	M	TCE	M	**2E-06**
1,4-DIOXANE	123-91-1	2.70E-01	N	1.29E-04	1.29E-04	3E-02	**4E-03**	**4E-03**	4.81E-02	5E-06		**2E-07**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	Not a Volatile COPC		---	---	-	---	---	---	2E-06		---
						Total Inhalation:	**3E+00**	**3E+00**				**3E-05**

		HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential MW-03RB	**Total Ingestion**	**2E+00**	**1E+00**	**1E-05**
	Total Dermal Contact	**1E+00**	**7E-01**	**4E-06**
	Total Inhalation	**3E+00**	**3E+00**	**3E-05**
	ALL PATHWAYS	**7E+00**	**6E+00**	**5E-05**
	Based on NDs only	**3E-01**	**2E-01**	**4E-06**
	Based on Detects only	**6E+00**	**5E+00**	**5E-05**
	Site-related only	**6E+00**	**5E+00**	**3E-05**

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**MW-03RB**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	RME child	RME adult
HIFc (L/kg BW/day)	4.27E-03	8.56E-03

COPC	CASRN	EPCmax GW (mg/L)	Daily Intake (mg/kg/day)				Oral SF $(mg/kg/day)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.0021	2.99E-05	1.80E-05	2.70E-05	8.99E-06	9.3E-03	kidney	3E-07	2E-07	3E-07	8E-08	**8E-07**
TRICHLOROETHENE	79-01-6	0.0021	8.98E-06		1.80E-05		3.7E-02	NHL+liver	3E-07		7E-07		**1E-06**
												Total Ingestion:	**2E-06**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	RME child	RME adult
HIFc (cm^2-event/kg/d)	3.49E+01	6.73E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	DAD (mg/kg/d)				Dermal SF $(mg/kg/d)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	2.10E-06	4.35E-06	2.61E-06	4.33E-06	1.44E-06	9.3E-03	kidney	4E-08	2E-08	4E-08	1E-08	**1E-07**
TRICHLOROETHENE	79-01-6	2.10E-06	1.31E-06		2.89E-06		3.7E-02	NHL+liver	5E-08		1E-07		**2E-07**
												Total Dermal:	**3E-07**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	RME child	RME adult
HIFc (mg-L/ug-m^3)	4.11E-05	1.37E-04

COPC	CASRN	EPCmax GW (ug/L)	Exp. Conc. (ug/m^3)				Inhalation IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	2.1	2.88E-01	1.73E-01	4.32E-01	1.44E-01	1.0E-06	kidney	3E-07	2E-07	4E-07	1E-07	**1E-06**
TRICHLOROETHENE	79-01-6	2.1	8.63E-02		2.88E-01		3.1E-06	NHL+liver	3E-07		9E-07		**1E-06**
												Total Inhalation:	**2E-06**

NHL = non-Hodkins lymphoma

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-03RC**

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	RME child	RME adult		RME lifetime
HIFnc (L/kg BW/day)	4.99E-02	3.00E-02	HIFc (L/kg BW/day)	1.28E-02

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Daily Intake (mg/kg/day)		Oral RfD (mg/kg/day)	Hazard Quotient		Daily Intake (mg/kg/day)	SFo (mg/kg/day)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	4.99E-04	3.00E-04	5E-03	**1E-01**	**6E-02**	1.28E-04	-		---
BENZENE	71-43-2	2.70E-01	Y	1.35E-05	8.09E-06	4E-03	**3E-03**	**2E-03**	3.47E-06	6E-02		**2E-07**
BROMODICHLOROMETHANE	75-27-4	1.90E-01	Y	9.47E-06	5.69E-06	8E-03	**1E-03**	**7E-04**	2.44E-06	6E-02		**2E-07**
CHLOROFORM	67-66-3	1.50E+00	Y	7.48E-05	4.49E-05	1E-02	**7E-03**	**4E-03**	1.93E-05	3E-02		**6E-07**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	2.49E-05	1.50E-05	2E-03	**1E-02**	**7E-03**	6.42E-06	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	2.49E-05	1.50E-05	2E-02	**1E-03**	**7E-04**	6.42E-06	8E-02		**5E-07**
ETHYLBENZENE	100-41-4	5.00E-01	N	2.49E-05	1.50E-05	5E-02	**5E-04**	**3E-04**	6.42E-06	1E-02		**7E-08**
TETRACHLOROETHENE	127-18-4	6.50E+00	Y	3.24E-04	1.95E-04	6E-03	**5E-02**	**3E-02**	8.34E-05	2E-03		**2E-07**
TRICHLOROETHENE	79-01-6	5.00E-01	N	2.49E-05	1.50E-05	5E-04	**5E-02**	**3E-02**	M	TCE	M	**4E-07**
1,4-DIOXANE	123-91-1	2.50E-01	N	1.25E-05	7.49E-06	3E-02	**4E-04**	**2E-04**	3.21E-06	1E-01		**3E-07**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	5.50E+00	N	2.74E-04	1.65E-04	2E-02	**1E-02**	**8E-03**	7.06E-05	1E-02		**1E-06**
						Total Ingestion:	**2E-01**	**1E-01**				**3E-06**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	RME child	RME adult		RME lifetime
HIFnc (cm^2-event/kg/d)	4.07E+02	2.36E+02	HIFc (cm^2-event/kg/d)	1.02E+02

COPC	CASRN	EPCmax GW (mg/cm^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				DAD (mg/kg/d)		Dermal RfD (mg/kg/d)	Hazard Quotient		DAD (mg/kg/d)	Dermal SF (mg/kg/d)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E-05	N	1.82E-05	1.21E-05	5E-03	**4E-03**	**2E-03**	5.07E-06	-		---
BENZENE	71-43-2	2.70E-07	Y	1.78E-06	1.18E-06	4E-03	**4E-04**	**3E-04**	4.99E-07	6E-02		**3E-08**
BROMODICHLOROMETHANE	75-27-4	1.90E-07	Y	5.89E-07	3.91E-07	8E-03	**7E-05**	**5E-05**	1.65E-07	6E-02		**1E-08**
CHLOROFORM	67-66-3	1.50E-06	Y	5.93E-06	3.93E-06	1E-02	**6E-04**	**4E-04**	1.66E-06	3E-02		**5E-08**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-07	N	2.75E-06	1.83E-06	2E-03	**1E-03**	**9E-04**	7.69E-07	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-07	N	1.48E-06	9.84E-07	2E-02	**7E-05**	**5E-05**	4.14E-07	8E-02		**3E-08**
ETHYLBENZENE	100-41-4	5.00E-07	N	1.31E-05	8.69E-06	5E-02	**3E-04**	**2E-04**	3.66E-06	1E-02		**4E-08**
TETRACHLOROETHENE	127-18-4	6.50E-06	Y	1.69E-04	1.12E-04	6E-03	**3E-02**	**2E-02**	4.74E-05	2E-03		**1E-07**
TRICHLOROETHENE	79-01-6	5.00E-07	N	3.63E-06	2.41E-06	5E-04	**7E-03**	**5E-03**	M	TCE	M	**6E-08**
1,4-DIOXANE	123-91-1	2.50E-07	N	3.93E-08	2.61E-08	3E-02	**1E-06**	**9E-07**	1.10E-08	1E-01		**1E-09**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA [a]		---	---	2E-02	**---**	**---**	---	1E-02		**---**
						Total Dermal:	**4E-02**	**3E-02**				**3E-07**

[a] Not assessed quantitatively per RAGS Part E because partition coefficients are outside the effective prediction domain (EPD)

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-03RC**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	RME child	RME adult		RME lifetime
HIFnc (mg-L/ug-m^3)	4.79E-04	4.79E-04	HIFc (mg-L/ug-m^3)	1.78E-04

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				EC (mg/m^3)		Inhalation RfC (mg/m^3)	Hazard Quotient		EC (ug/m^3)	Inhalation IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	4.79E-03	4.79E-03	3E-02	**2E-01**	**2E-01**	1.78E+00	-		---
BENZENE	71-43-2	2.70E-01	Y	1.29E-04	1.29E-04	3E-02	**4E-03**	**4E-03**	4.81E-02	8E-06		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.90E-01	Y	9.11E-05	9.11E-05	-	---	---	3.38E-02	4E-05		**1E-06**
CHLOROFORM	67-66-3	1.50E+00	Y	7.19E-04	7.19E-04	1E-01	**7E-03**	**7E-03**	2.67E-01	2E-05		**6E-06**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	2.40E-04	2.40E-04	-	---	---	8.90E-02	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	2.40E-04	2.40E-04	-	---	---	8.90E-02	-		---
ETHYLBENZENE	100-41-4	5.00E-01	N	2.40E-04	2.40E-04	1E+00	**2E-04**	**2E-04**	8.90E-02	3E-06		**2E-07**
TETRACHLOROETHENE	127-18-4	6.50E+00	Y	3.12E-03	3.12E-03	4E-02	**8E-02**	**8E-02**	1.16E+00	3E-07		**3E-07**
TRICHLOROETHENE	79-01-6	5.00E-01	N	2.40E-04	2.40E-04	2E-03	**1E-01**	**1E-01**	M	TCE	M	**5E-07**
1,4-DIOXANE	123-91-1	2.50E-01	N	1.20E-04	1.20E-04	3E-02	**4E-03**	**4E-03**	4.45E-02	5E-06		**2E-07**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	Not a Volatile COPC		---	---	-	---	---	---	2E-06		---
						Total Inhalation:	**4E-01**	**4E-01**				**9E-06**

		HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential MW-03RC	**Total Ingestion**	**2E-01**	**1E-01**	**3E-06**
	Total Dermal Contact	**4E-02**	**3E-02**	**3E-07**
	Total Inhalation	**4E-01**	**4E-01**	**9E-06**
	ALL PATHWAYS	**7E-01**	**5E-01**	**1E-05**
	Based on NDs only	**5E-01**	**4E-01**	**3E-06**
	Based on Detects only	**2E-01**	**1E-01**	**9E-06**
	Site-related only	**4E-01**	**3E-01**	**2E-06**

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**MW-03RC**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	RME child	RME adult
HIFc (L/kg BW/day)	4.27E-03	8.56E-03

COPC	CASRN	EPCmax GW (mg/L)	Daily Intake (mg/kg/day)				Oral SF $(mg/kg/day)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.0005	7.12E-06	4.27E-06	6.42E-06	2.14E-06	9.3E-03	kidney	7E-08	4E-08	6E-08	2E-08	**2E-07**
TRICHLOROETHENE	79-01-6	0.0005	2.14E-06		4.28E-06		3.7E-02	NHL+liver	8E-08		2E-07		**2E-07**
												Total Ingestion:	**4E-07**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	RME child	RME adult
HIFc (cm^2-event/kg/d)	3.49E+01	6.73E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	DAD (mg/kg/d)				Dermal SF $(mg/kg/d)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	5.00E-07	1.04E-06	6.21E-07	1.03E-06	3.44E-07	9.3E-03	kidney	1E-08	6E-09	1E-08	3E-09	**3E-08**
TRICHLOROETHENE	79-01-6	5.00E-07	3.11E-07		6.88E-07		3.7E-02	NHL+liver	1E-08		3E-08		**4E-08**
												Total Dermal:	**6E-08**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	RME child	RME adult
HIFc (mg-L/ug-m^3)	4.11E-05	1.37E-04

COPC	CASRN	EPCmax GW (ug/L)	Exp. Conc. (ug/m^3)				Inhalation IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.5	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	0.5	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
												Total Inhalation:	**5E-07**

NHL = non-Hodkins lymphoma

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-03RD**

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	RME child	RME adult		RME lifetime
HIFnc (L/kg BW/day)	4.99E-02	3.00E-02	HIFc (L/kg BW/day)	1.28E-02

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Daily Intake (mg/kg/day)		Oral RfD (mg/kg/day)	Hazard Quotient		Daily Intake (mg/kg/day)	SFo (mg/kg/day)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	4.99E-04	3.00E-04	5E-03	**1E-01**	**6E-02**	1.28E-04	-		---
BENZENE	71-43-2	2.00E-01	Y	9.97E-06	5.99E-06	4E-03	**2E-03**	**1E-03**	2.57E-06	6E-02		**1E-07**
BROMODICHLOROMETHANE	75-27-4	5.00E-01	N	2.49E-05	1.50E-05	8E-03	**3E-03**	**2E-03**	6.42E-06	6E-02		**4E-07**
CHLOROFORM	67-66-3	1.50E-01	Y	7.48E-06	4.49E-06	1E-02	**7E-04**	**4E-04**	1.93E-06	3E-02		**6E-08**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	2.49E-05	1.50E-05	2E-03	**1E-02**	**7E-03**	6.42E-06	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	2.49E-05	1.50E-05	2E-02	**1E-03**	**7E-04**	6.42E-06	8E-02		**5E-07**
ETHYLBENZENE	100-41-4	5.00E-01	N	2.49E-05	1.50E-05	5E-02	**5E-04**	**3E-04**	6.42E-06	1E-02		**7E-08**
TETRACHLOROETHENE	127-18-4	5.00E-01	N	2.49E-05	1.50E-05	6E-03	**4E-03**	**2E-03**	6.42E-06	2E-03		**1E-08**
TRICHLOROETHENE	79-01-6	5.00E-01	N	2.49E-05	1.50E-05	5E-04	**5E-02**	**3E-02**	M	TCE	M	**4E-07**
1,4-DIOXANE	123-91-1	2.20E-01	N	1.10E-05	6.59E-06	3E-02	**4E-04**	**2E-04**	2.82E-06	1E-01		**3E-07**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA	NA	---	---	2E-02	---	---	---	1E-02		---
						Total Ingestion:	**2E-01**	**1E-01**				**2E-06**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	RME child	RME adult		RME lifetime
HIFnc (cm^2-event/kg/d)	4.07E+02	2.36E+02	HIFc (cm^2-event/kg/d)	1.02E+02

COPC	CASRN	EPCmax GW (mg/cm^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				DAD (mg/kg/d)		Dermal RfD (mg/kg/d)	Hazard Quotient		DAD (mg/kg/d)	Dermal SF (mg/kg/d)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E-05	N	1.82E-05	1.21E-05	5E-03	**4E-03**	**2E-03**	5.07E-06	-		---
BENZENE	71-43-2	2.00E-07	Y	1.32E-06	8.77E-07	4E-03	**3E-04**	**2E-04**	3.69E-07	6E-02		**2E-08**
BROMODICHLOROMETHANE	75-27-4	5.00E-07	N	1.55E-06	1.03E-06	8E-03	**2E-04**	**1E-04**	4.33E-07	6E-02		**3E-08**
CHLOROFORM	67-66-3	1.50E-07	Y	5.93E-07	3.93E-07	1E-02	**6E-05**	**4E-05**	1.66E-07	3E-02		**5E-09**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-07	N	2.75E-06	1.83E-06	2E-03	**1E-03**	**9E-04**	7.69E-07	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-07	N	1.48E-06	9.84E-07	2E-02	**7E-05**	**5E-05**	4.14E-07	8E-02		**3E-08**
ETHYLBENZENE	100-41-4	5.00E-07	N	1.31E-05	8.69E-06	5E-02	**3E-04**	**2E-04**	3.66E-06	1E-02		**4E-08**
TETRACHLOROETHENE	127-18-4	5.00E-07	N	1.30E-05	8.65E-06	6E-03	**2E-03**	**1E-03**	3.64E-06	2E-03		**8E-09**
TRICHLOROETHENE	79-01-6	5.00E-07	N	3.63E-06	2.41E-06	5E-04	**7E-03**	**5E-03**	M	TCE	M	**6E-08**
1,4-DIOXANE	123-91-1	2.20E-07	N	3.46E-08	2.29E-08	3E-02	**1E-06**	**8E-07**	9.66E-09	1E-01		**1E-09**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA [a]		---	---	2E-02	---	---	---	1E-02		---
						Total Dermal:	**2E-02**	**1E-02**				**2E-07**

[a] Not assessed quantitatively per RAGS Part E because partition coefficients are outside the effective prediction domain (EPD)

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-03RD**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	RME child	RME adult		RME lifetime
HIFnc (mg-L/ug-m^3)	4.79E-04	4.79E-04	HIFc (mg-L/ug-m^3)	1.78E-04

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				EC (mg/m^3)		Inhalation RfC (mg/m^3)	Hazard Quotient		EC (ug/m^3)	Inhalation IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	4.79E-03	4.79E-03	3E-02	**2E-01**	**2E-01**	1.78E+00	-		---
BENZENE	71-43-2	2.00E-01	Y	9.59E-05	9.59E-05	3E-02	**3E-03**	**3E-03**	3.56E-02	8E-06		**3E-07**
BROMODICHLOROMETHANE	75-27-4	5.00E-01	N	2.40E-04	2.40E-04	-	---	---	8.90E-02	4E-05		**3E-06**
CHLOROFORM	67-66-3	1.50E-01	Y	7.19E-05	7.19E-05	1E-01	**7E-04**	**7E-04**	2.67E-02	2E-05		**6E-07**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	2.40E-04	2.40E-04	-	---	---	8.90E-02	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	2.40E-04	2.40E-04	-	---	---	8.90E-02	-		---
ETHYLBENZENE	100-41-4	5.00E-01	N	2.40E-04	2.40E-04	1E+00	**2E-04**	**2E-04**	8.90E-02	3E-06		**2E-07**
TETRACHLOROETHENE	127-18-4	5.00E-01	N	2.40E-04	2.40E-04	4E-02	**6E-03**	**6E-03**	8.90E-02	3E-07		**2E-08**
TRICHLOROETHENE	79-01-6	5.00E-01	N	2.40E-04	2.40E-04	2E-03	**1E-01**	**1E-01**	M	TCE	M	**5E-07**
1,4-DIOXANE	123-91-1	2.20E-01	N	1.05E-04	1.05E-04	3E-02	**4E-03**	**4E-03**	3.92E-02	5E-06		**2E-07**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	Not a Volatile COPC		---	---	-	---	---	---	2E-06		---
						Total Inhalation:	**3E-01**	**3E-01**				**5E-06**

		HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential MW-03RD	**Total Ingestion**	**2E-01**	**1E-01**	**2E-06**
	Total Dermal Contact	**2E-02**	**1E-02**	**2E-07**
	Total Inhalation	**3E-01**	**3E-01**	**5E-06**
	ALL PATHWAYS	**5E-01**	**4E-01**	**7E-06**
	Based on NDs only	**5E-01**	**4E-01**	**6E-06**
	Based on Detects only	**8E-03**	**6E-03**	**1E-06**
	Site-related only	**2E-01**	**2E-01**	**2E-06**

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**MW-03RD**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	RME child	RME adult
HIFc (L/kg BW/day)	4.27E-03	8.56E-03

COPC	CASRN	EPCmax GW (mg/L)	Daily Intake (mg/kg/day)				Oral SF $(mg/kg/day)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.0005	7.12E-06	4.27E-06	6.42E-06	2.14E-06	9.3E-03	kidney	7E-08	4E-08	6E-08	2E-08	**2E-07**
TRICHLOROETHENE	79-01-6	0.0005	2.14E-06		4.28E-06		3.7E-02	NHL+liver	8E-08		2E-07		**2E-07**
												Total Ingestion:	**4E-07**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	RME child	RME adult
HIFc (cm^2-event/kg/d)	3.49E+01	6.73E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	DAD (mg/kg/d)				Dermal SF $(mg/kg/d)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	5.00E-07	1.04E-06	6.21E-07	1.03E-06	3.44E-07	9.3E-03	kidney	1E-08	6E-09	1E-08	3E-09	**3E-08**
TRICHLOROETHENE	79-01-6	5.00E-07	3.11E-07		6.88E-07		3.7E-02	NHL+liver	1E-08		3E-08		**4E-08**
												Total Dermal:	**6E-08**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	RME child	RME adult
HIFc (mg-L/ug-m^3)	4.11E-05	1.37E-04

COPC	CASRN	EPCmax GW (ug/L)	Exp. Conc. (ug/m^3)				Inhalation IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.5	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	0.5	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
												Total Inhalation:	**5E-07**

NHL = non-Hodkins lymphoma

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-08C**

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	RME child	RME adult		RME lifetime
HIFnc (L/kg BW/day)	4.99E-02	3.00E-02	HIFc (L/kg BW/day)	1.28E-02

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Daily Intake (mg/kg/day)		Oral RfD (mg/kg/day)	Hazard Quotient		Daily Intake (mg/kg/day)	SFo (mg/kg/day)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	4.99E-04	3.00E-04	5E-03	**1E-01**	**6E-02**	1.28E-04	-		**---**
BENZENE	71-43-2	1.30E-01	Y	6.48E-06	3.90E-06	4E-03	**2E-03**	**1E-03**	1.67E-06	6E-02		**9E-08**
BROMODICHLOROMETHANE	75-27-4	5.00E-01	N	2.49E-05	1.50E-05	8E-03	**3E-03**	**2E-03**	6.42E-06	6E-02		**4E-07**
CHLOROFORM	67-66-3	1.70E-01	Y	8.48E-06	5.09E-06	1E-02	**8E-04**	**5E-04**	2.18E-06	3E-02		**7E-08**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	2.49E-05	1.50E-05	2E-03	**1E-02**	**7E-03**	6.42E-06	-		**---**
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	2.49E-05	1.50E-05	2E-02	**1E-03**	**7E-04**	6.42E-06	8E-02		**5E-07**
ETHYLBENZENE	100-41-4	5.00E-01	N	2.49E-05	1.50E-05	5E-02	**5E-04**	**3E-04**	6.42E-06	1E-02		**7E-08**
TETRACHLOROETHENE	127-18-4	5.00E-01	N	2.49E-05	1.50E-05	6E-03	**4E-03**	**2E-03**	6.42E-06	2E-03		**1E-08**
TRICHLOROETHENE	79-01-6	5.00E-01	N	2.49E-05	1.50E-05	5E-04	**5E-02**	**3E-02**	M	TCE	M	**4E-07**
1,4-DIOXANE	123-91-1	2.50E-01	N	1.25E-05	7.49E-06	3E-02	**4E-04**	**2E-04**	3.21E-06	1E-01		**3E-07**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	5.50E+00	N	2.74E-04	1.65E-04	2E-02	**1E-02**	**8E-03**	7.06E-05	1E-02		**1E-06**
						Total Ingestion:	**2E-01**	**1E-01**				**3E-06**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	RME child	RME adult		RME lifetime
HIFnc (cm^2-event/kg/d)	4.07E+02	2.36E+02	HIFc (cm^2-event/kg/d)	1.02E+02

COPC	CASRN	EPCmax GW (mg/cm^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				DAD (mg/kg/d)		Dermal RfD (mg/kg/d)	Hazard Quotient		DAD (mg/kg/d)	Dermal SF (mg/kg/d)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E-05	N	1.82E-05	1.21E-05	5E-03	**4E-03**	**2E-03**	5.07E-06	-		**---**
BENZENE	71-43-2	1.30E-07	Y	8.59E-07	5.70E-07	4E-03	**2E-04**	**1E-04**	2.40E-07	6E-02		**1E-08**
BROMODICHLOROMETHANE	75-27-4	5.00E-07	N	1.55E-06	1.03E-06	8E-03	**2E-04**	**1E-04**	4.33E-07	6E-02		**3E-08**
CHLOROFORM	67-66-3	1.70E-07	Y	6.72E-07	4.46E-07	1E-02	**7E-05**	**4E-05**	1.88E-07	3E-02		**6E-09**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-07	N	2.75E-06	1.83E-06	2E-03	**1E-03**	**9E-04**	7.69E-07	-		**---**
DIBROMOCHLOROMETHANE	124-48-1	5.00E-07	N	1.48E-06	9.84E-07	2E-02	**7E-05**	**5E-05**	4.14E-07	8E-02		**3E-08**
ETHYLBENZENE	100-41-4	5.00E-07	N	1.31E-05	8.69E-06	5E-02	**3E-04**	**2E-04**	3.66E-06	1E-02		**4E-08**
TETRACHLOROETHENE	127-18-4	5.00E-07	N	1.30E-05	8.65E-06	6E-03	**2E-03**	**1E-03**	3.64E-06	2E-03		**8E-09**
TRICHLOROETHENE	79-01-6	5.00E-07	N	3.63E-06	2.41E-06	5E-04	**7E-03**	**5E-03**	M	TCE	M	**6E-08**
1,4-DIOXANE	123-91-1	2.50E-07	N	3.93E-08	2.61E-08	3E-02	**1E-06**	**9E-07**	1.10E-08	1E-01		**1E-09**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA [a]		---	---	2E-02	**---**	**---**	---	1E-02		**---**
						Total Dermal:	**2E-02**	**1E-02**				**2E-07**

[a] Not assessed quantitatively per RAGS Part E because partition coefficients are outside the effective prediction domain (EPD)

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-08C**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	RME child	RME adult		RME lifetime
HIFnc (mg-L/ug-m^3)	4.79E-04	4.79E-04	HIFc (mg-L/ug-m^3)	1.78E-04

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				EC (mg/m^3)		Inhalation RfC (mg/m^3)	Hazard Quotient		EC (ug/m^3)	Inhalation IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	4.79E-03	4.79E-03	3E-02	**2E-01**	**2E-01**	1.78E+00	-		---
BENZENE	71-43-2	1.30E-01	Y	6.23E-05	6.23E-05	3E-02	**2E-03**	**2E-03**	2.32E-02	8E-06		**2E-07**
BROMODICHLOROMETHANE	75-27-4	5.00E-01	N	2.40E-04	2.40E-04	-	---	---	8.90E-02	4E-05		**3E-06**
CHLOROFORM	67-66-3	1.70E-01	Y	8.15E-05	8.15E-05	1E-01	**8E-04**	**8E-04**	3.03E-02	2E-05		**7E-07**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	2.40E-04	2.40E-04	-	---	---	8.90E-02	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	2.40E-04	2.40E-04	-	---	---	8.90E-02	-		---
ETHYLBENZENE	100-41-4	5.00E-01	N	2.40E-04	2.40E-04	1E+00	**2E-04**	**2E-04**	8.90E-02	3E-06		**2E-07**
TETRACHLOROETHENE	127-18-4	5.00E-01	N	2.40E-04	2.40E-04	4E-02	**6E-03**	**6E-03**	8.90E-02	3E-07		**2E-08**
TRICHLOROETHENE	79-01-6	5.00E-01	N	2.40E-04	2.40E-04	2E-03	**1E-01**	**1E-01**	M	TCE	M	**5E-07**
1,4-DIOXANE	123-91-1	2.50E-01	N	1.20E-04	1.20E-04	3E-02	**4E-03**	**4E-03**	4.45E-02	5E-06		**2E-07**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	Not a Volatile COPC		---	---	-	---	---	---	2E-06		---
						Total Inhalation:	**3E-01**	**3E-01**				**5E-06**

		HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential MW-08C	**Total Ingestion**	**2E-01**	**1E-01**	**3E-06**
	Total Dermal Contact	**2E-02**	**1E-02**	**2E-07**
	Total Inhalation	**3E-01**	**3E-01**	**5E-06**
	ALL PATHWAYS	**5E-01**	**4E-01**	**8E-06**
	Based on NDs only	**5E-01**	**4E-01**	**7E-06**
	Based on Detects only	**6E-03**	**5E-03**	**1E-06**
	Site-related only	**2E-01**	**2E-01**	**2E-06**

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**MW-08C**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	RME child	RME adult
HIFc (L/kg BW/day)	4.27E-03	8.56E-03

COPC	CASRN	EPCmax GW (mg/L)	Daily Intake (mg/kg/day)				Oral SF $(mg/kg/day)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.0005	7.12E-06	4.27E-06	6.42E-06	2.14E-06	9.3E-03	kidney	7E-08	4E-08	6E-08	2E-08	**2E-07**
TRICHLOROETHENE	79-01-6	0.0005	2.14E-06		4.28E-06		3.7E-02	NHL+liver	8E-08		2E-07		**2E-07**
												Total Ingestion:	**4E-07**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	RME child	RME adult
HIFc (cm^2-event/kg/d)	3.49E+01	6.73E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	DAD (mg/kg/d)				Dermal SF $(mg/kg/d)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	5.00E-07	1.04E-06	6.21E-07	1.03E-06	3.44E-07	9.3E-03	kidney	1E-08	6E-09	1E-08	3E-09	**3E-08**
TRICHLOROETHENE	79-01-6	5.00E-07	3.11E-07		6.88E-07		3.7E-02	NHL+liver	1E-08		3E-08		**4E-08**
												Total Dermal:	**6E-08**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	RME child	RME adult
HIFc (mg-L/ug-m^3)	4.11E-05	1.37E-04

COPC	CASRN	EPCmax GW (ug/L)	Exp. Conc. (ug/m^3)				Inhalation IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.5	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	0.5	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
												Total Inhalation:	**5E-07**

NHL = non-Hodkins lymphoma

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-13L**

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	RME child	RME adult		RME lifetime
HIFnc (L/kg BW/day)	4.99E-02	3.00E-02	HIFc (L/kg BW/day)	1.28E-02

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Daily Intake (mg/kg/day)		Oral RfD (mg/kg/day)	Hazard Quotient		Daily Intake (mg/kg/day)	SFo (mg/kg/day)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	4.99E-04	3.00E-04	5E-03	**1E-01**	**6E-02**	1.28E-04	-		---
BENZENE	71-43-2	5.00E-01	N	2.49E-05	1.50E-05	4E-03	**6E-03**	**4E-03**	6.42E-06	6E-02		**4E-07**
BROMODICHLOROMETHANE	75-27-4	2.20E-01	Y	1.10E-05	6.59E-06	8E-03	**1E-03**	**8E-04**	2.82E-06	6E-02		**2E-07**
CHLOROFORM	67-66-3	2.20E+00	Y	1.10E-04	6.59E-05	1E-02	**1E-02**	**7E-03**	2.82E-05	3E-02		**9E-07**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	Y	2.49E-05	1.50E-05	2E-03	**1E-02**	**7E-03**	6.42E-06	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	2.49E-05	1.50E-05	2E-02	**1E-03**	**7E-04**	6.42E-06	8E-02		**5E-07**
ETHYLBENZENE	100-41-4	5.00E-01	N	2.49E-05	1.50E-05	5E-02	**5E-04**	**3E-04**	6.42E-06	1E-02		**7E-08**
TETRACHLOROETHENE	127-18-4	5.10E+01	Y	2.54E-03	1.53E-03	6E-03	**4E-01**	**3E-01**	6.55E-04	2E-03		**1E-06**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	1.45E-05	8.69E-06	5E-04	**3E-02**	**2E-02**	M	TCE	M	**2E-07**
1,4-DIOXANE	123-91-1	2.10E-01	N	1.05E-05	6.29E-06	3E-02	**3E-04**	**2E-04**	2.70E-06	1E-01		**3E-07**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA	NA	---	---	2E-02	---	---	---	1E-02		---
						Total Ingestion:	**6E-01**	**4E-01**				**4E-06**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	RME child	RME adult		RME lifetime
HIFnc (cm^2-event/kg/d)	4.07E+02	2.36E+02	HIFc (cm^2-event/kg/d)	1.02E+02

COPC	CASRN	EPCmax GW (mg/cm^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				DAD (mg/kg/d)		Dermal RfD (mg/kg/d)	Hazard Quotient		DAD (mg/kg/d)	Dermal SF (mg/kg/d)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E-05	N	1.82E-05	1.21E-05	5E-03	**4E-03**	**2E-03**	5.07E-06	-		---
BENZENE	71-43-2	5.00E-07	N	3.30E-06	2.19E-06	4E-03	**8E-04**	**5E-04**	9.23E-07	6E-02		**5E-08**
BROMODICHLOROMETHANE	75-27-4	2.20E-07	Y	6.82E-07	4.53E-07	8E-03	**9E-05**	**6E-05**	1.91E-07	6E-02		**1E-08**
CHLOROFORM	67-66-3	2.20E-06	Y	8.69E-06	5.77E-06	1E-02	**9E-04**	**6E-04**	2.43E-06	3E-02		**8E-08**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-07	Y	2.75E-06	1.83E-06	2E-03	**1E-03**	**9E-04**	7.69E-07	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-07	N	1.48E-06	9.84E-07	2E-02	**7E-05**	**5E-05**	4.14E-07	8E-02		**3E-08**
ETHYLBENZENE	100-41-4	5.00E-07	N	1.31E-05	8.69E-06	5E-02	**3E-04**	**2E-04**	3.66E-06	1E-02		**4E-08**
TETRACHLOROETHENE	127-18-4	5.10E-05	Y	1.33E-03	8.83E-04	6E-03	**2E-01**	**1E-01**	3.72E-04	2E-03		**8E-07**
TRICHLOROETHENE	79-01-6	2.90E-07	Y	2.10E-06	1.40E-06	5E-04	**4E-03**	**3E-03**	M	TCE	M	**4E-08**
1,4-DIOXANE	123-91-1	2.10E-07	N	3.30E-08	2.19E-08	3E-02	**1E-06**	**7E-07**	9.22E-09	1E-01		**9E-10**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA [a]		---	---	2E-02	---	---	---	1E-02		---
						Total Dermal:	**2E-01**	**2E-01**				**1E-06**

[a] Not assessed quantitatively per RAGS Part E because partition coefficients are outside the effective prediction domain (EPD)

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-13L**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	RME child	RME adult		RME lifetime
HIFnc (mg-L/ug-m^3)	4.79E-04	4.79E-04	HIFc (mg-L/ug-m^3)	1.78E-04

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				EC (mg/m^3)		Inhalation RfC (mg/m^3)	Hazard Quotient		EC (ug/m^3)	Inhalation IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	4.79E-03	4.79E-03	3E-02	**2E-01**	**2E-01**	1.78E+00	-		---
BENZENE	71-43-2	5.00E-01	N	2.40E-04	2.40E-04	3E-02	**8E-03**	**8E-03**	8.90E-02	8E-06		**7E-07**
BROMODICHLOROMETHANE	75-27-4	2.20E-01	Y	1.05E-04	1.05E-04	-	---	---	3.92E-02	4E-05		**1E-06**
CHLOROFORM	67-66-3	2.20E+00	Y	1.05E-03	1.05E-03	1E-01	**1E-02**	**1E-02**	3.92E-01	2E-05		**9E-06**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	Y	2.40E-04	2.40E-04	-	---	---	8.90E-02	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	2.40E-04	2.40E-04	-	---	---	8.90E-02	-		---
ETHYLBENZENE	100-41-4	5.00E-01	N	2.40E-04	2.40E-04	1E+00	**2E-04**	**2E-04**	8.90E-02	3E-06		**2E-07**
TETRACHLOROETHENE	127-18-4	5.10E+01	Y	2.45E-02	2.45E-02	4E-02	**6E-01**	**6E-01**	9.08E+00	3E-07		**2E-06**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	1.39E-04	1.39E-04	2E-03	**7E-02**	**7E-02**	M	TCE	M	**3E-07**
1,4-DIOXANE	123-91-1	2.10E-01	N	1.01E-04	1.01E-04	3E-02	**3E-03**	**3E-03**	3.74E-02	5E-06		**2E-07**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	Not a Volatile COPC		---	---	-	---	---	---	2E-06		---
						Total Inhalation:	**9E-01**	**9E-01**				**1E-05**

		HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential MW-13L	**Total Ingestion**	**6E-01**	**4E-01**	**4E-06**
	Total Dermal Contact	**2E-01**	**2E-01**	**1E-06**
	Total Inhalation	**9E-01**	**9E-01**	**1E-05**
	ALL PATHWAYS	**2E+00**	**1E+00**	**2E-05**
	Based on NDs only	**3E-01**	**2E-01**	**2E-06**
	Based on Detects only	**1E+00**	**1E+00**	**2E-05**
	Site-related only	**1E+00**	**1E+00**	**6E-06**

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**MW-13L**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	RME child	RME adult
HIFc (L/kg BW/day)	4.27E-03	8.56E-03

COPC	CASRN	EPCmax GW (mg/L)	Daily Intake (mg/kg/day)				Oral SF $(mg/kg/day)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.00029	4.13E-06	2.48E-06	3.72E-06	1.24E-06	9.3E-03	kidney	4E-08	2E-08	3E-08	1E-08	**1E-07**
TRICHLOROETHENE	79-01-6	0.00029	1.24E-06		2.48E-06		3.7E-02	NHL+liver	5E-08		9E-08		**1E-07**
												Total Ingestion:	**2E-07**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	RME child	RME adult
HIFc (cm^2-event/kg/d)	3.49E+01	6.73E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	DAD (mg/kg/d)				Dermal SF $(mg/kg/d)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	2.90E-07	6.01E-07	3.60E-07	5.98E-07	1.99E-07	9.3E-03	kidney	6E-09	3E-09	6E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	2.90E-07	1.80E-07		3.99E-07		3.7E-02	NHL+liver	7E-09		1E-08		**2E-08**
												Total Dermal:	**4E-08**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	RME child	RME adult
HIFc (mg-L/ug-m^3)	4.11E-05	1.37E-04

COPC	CASRN	EPCmax GW (ug/L)	Exp. Conc. (ug/m^3)				Inhalation IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.29	3.97E-02	2.38E-02	5.96E-02	1.99E-02	1.0E-06	kidney	4E-08	2E-08	6E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	0.29	1.19E-02		3.97E-02		3.1E-06	NHL+liver	4E-08		1E-07		**2E-07**
												Total Inhalation:	**3E-07**

NHL = non-Hodkins lymphoma

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-34C**

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	RME child	RME adult		RME lifetime
HIFnc (L/kg BW/day)	4.99E-02	3.00E-02	HIFc (L/kg BW/day)	1.28E-02

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Daily Intake (mg/kg/day)		Oral RfD (mg/kg/day)	Hazard Quotient		Daily Intake (mg/kg/day)	SFo $(mg/kg/day)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	4.99E-04	3.00E-04	5E-03	**1E-01**	**6E-02**	1.28E-04	-		---
BENZENE	71-43-2	5.00E-01	N	2.49E-05	1.50E-05	4E-03	**6E-03**	**4E-03**	6.42E-06	6E-02		**4E-07**
BROMODICHLOROMETHANE	75-27-4	5.00E-01	N	2.49E-05	1.50E-05	8E-03	**3E-03**	**2E-03**	6.42E-06	6E-02		**4E-07**
CHLOROFORM	67-66-3	5.00E-01	N	2.49E-05	1.50E-05	1E-02	**2E-03**	**1E-03**	6.42E-06	3E-02		**2E-07**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	2.49E-05	1.50E-05	2E-03	**1E-02**	**7E-03**	6.42E-06	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	2.49E-05	1.50E-05	2E-02	**1E-03**	**7E-04**	6.42E-06	8E-02		**5E-07**
ETHYLBENZENE	100-41-4	5.00E-01	N	2.49E-05	1.50E-05	5E-02	**5E-04**	**3E-04**	6.42E-06	1E-02		**7E-08**
TETRACHLOROETHENE	127-18-4	5.00E-01	N	2.49E-05	1.50E-05	6E-03	**4E-03**	**2E-03**	6.42E-06	2E-03		**1E-08**
TRICHLOROETHENE	79-01-6	5.00E-01	N	2.49E-05	1.50E-05	5E-04	**5E-02**	**3E-02**	M	TCE	M	**4E-07**
1,4-DIOXANE	123-91-1	2.05E-01	N	1.02E-05	6.14E-06	3E-02	**3E-04**	**2E-04**	2.63E-06	1E-01		**3E-07**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA	NA	---	---	2E-02	---	---	---	1E-02		---
						Total Ingestion:	**2E-01**	**1E-01**				**2E-06**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	RME child	RME adult		RME lifetime
HIFnc (cm^2-event/kg/d)	4.07E+02	2.36E+02	HIFc (cm^2-event/kg/d)	1.02E+02

COPC	CASRN	EPCmax GW (mg/cm^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				DAD (mg/kg/d)		Dermal RfD (mg/kg/d)	Hazard Quotient		DAD (mg/kg/d)	Dermal SF $(mg/kg/d)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E-05	N	1.82E-05	1.21E-05	5E-03	**4E-03**	**2E-03**	5.07E-06	-		---
BENZENE	71-43-2	5.00E-07	N	3.30E-06	2.19E-06	4E-03	**8E-04**	**5E-04**	9.23E-07	6E-02		**5E-08**
BROMODICHLOROMETHANE	75-27-4	5.00E-07	N	1.55E-06	1.03E-06	8E-03	**2E-04**	**1E-04**	4.33E-07	6E-02		**3E-08**
CHLOROFORM	67-66-3	5.00E-07	N	1.98E-06	1.31E-06	1E-02	**2E-04**	**1E-04**	5.52E-07	3E-02		**2E-08**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-07	N	2.75E-06	1.83E-06	2E-03	**1E-03**	**9E-04**	7.69E-07	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-07	N	1.48E-06	9.84E-07	2E-02	**7E-05**	**5E-05**	4.14E-07	8E-02		**3E-08**
ETHYLBENZENE	100-41-4	5.00E-07	N	1.31E-05	8.69E-06	5E-02	**3E-04**	**2E-04**	3.66E-06	1E-02		**4E-08**
TETRACHLOROETHENE	127-18-4	5.00E-07	N	1.30E-05	8.65E-06	6E-03	**2E-03**	**1E-03**	3.64E-06	2E-03		**8E-09**
TRICHLOROETHENE	79-01-6	5.00E-07	N	3.63E-06	2.41E-06	5E-04	**7E-03**	**5E-03**	M	TCE	M	**6E-08**
1,4-DIOXANE	123-91-1	2.05E-07	N	3.22E-08	2.14E-08	3E-02	**1E-06**	**7E-07**	9.00E-09	1E-01		**9E-10**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA [a]		---	---	2E-02	---	---	---	1E-02		---
						Total Dermal:	**2E-02**	**1E-02**				**2E-07**

[a] Not assessed quantitatively per RAGS Part E because partition coefficients are outside the effective prediction domain (EPD)

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-34C**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	RME child	RME adult		RME lifetime
HIFnc (mg-L/ug-m^3)	4.79E-04	4.79E-04	HIFc (mg-L/ug-m^3)	1.78E-04

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				EC (mg/m^3)		Inhalation RfC (mg/m^3)	Hazard Quotient		EC (ug/m^3)	Inhalation IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	4.79E-03	4.79E-03	3E-02	**2E-01**	**2E-01**	1.78E+00	-		---
BENZENE	71-43-2	5.00E-01	N	2.40E-04	2.40E-04	3E-02	**8E-03**	**8E-03**	8.90E-02	8E-06		**7E-07**
BROMODICHLOROMETHANE	75-27-4	5.00E-01	N	2.40E-04	2.40E-04	-	---	---	8.90E-02	4E-05		**3E-06**
CHLOROFORM	67-66-3	5.00E-01	N	2.40E-04	2.40E-04	1E-01	**2E-03**	**2E-03**	8.90E-02	2E-05		**2E-06**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	2.40E-04	2.40E-04	-	---	---	8.90E-02	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	2.40E-04	2.40E-04	-	---	---	8.90E-02	-		---
ETHYLBENZENE	100-41-4	5.00E-01	N	2.40E-04	2.40E-04	1E+00	**2E-04**	**2E-04**	8.90E-02	3E-06		**2E-07**
TETRACHLOROETHENE	127-18-4	5.00E-01	N	2.40E-04	2.40E-04	4E-02	**6E-03**	**6E-03**	8.90E-02	3E-07		**2E-08**
TRICHLOROETHENE	79-01-6	5.00E-01	N	2.40E-04	2.40E-04	2E-03	**1E-01**	**1E-01**	M	TCE	M	**5E-07**
1,4-DIOXANE	123-91-1	2.05E-01	N	9.83E-05	9.83E-05	3E-02	**3E-03**	**3E-03**	3.65E-02	5E-06		**2E-07**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	Not a Volatile COPC		---	---	-	---	---	---	2E-06		---
						Total Inhalation:	**3E-01**	**3E-01**				**7E-06**

		HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential MW-34C	**Total Ingestion**	**2E-01**	**1E-01**	**2E-06**
	Total Dermal Contact	**2E-02**	**1E-02**	**2E-07**
	Total Inhalation	**3E-01**	**3E-01**	**7E-06**
	ALL PATHWAYS	**5E-01**	**4E-01**	**9E-06**
	Based on NDs only	**5E-01**	**4E-01**	**9E-06**
	Based on Detects only	**All ND**	**All ND**	**All ND**
	Site-related only	**2E-01**	**2E-01**	**1E-06**

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**MW-34C**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	RME child	RME adult
HIFc (L/kg BW/day)	4.27E-03	8.56E-03

COPC	CASRN	EPCmax GW (mg/L)	Daily Intake (mg/kg/day)				Oral SF $(mg/kg/day)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.0005	7.12E-06	4.27E-06	6.42E-06	2.14E-06	9.3E-03	kidney	7E-08	4E-08	6E-08	2E-08	**2E-07**
TRICHLOROETHENE	79-01-6	0.0005	2.14E-06		4.28E-06		3.7E-02	NHL+liver	8E-08		2E-07		**2E-07**
												Total Ingestion:	**4E-07**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	RME child	RME adult
HIFc (cm^2-event/kg/d)	3.49E+01	6.73E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	DAD (mg/kg/d)				Dermal SF $(mg/kg/d)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	5.00E-07	1.04E-06	6.21E-07	1.03E-06	3.44E-07	9.3E-03	kidney	1E-08	6E-09	1E-08	3E-09	**3E-08**
TRICHLOROETHENE	79-01-6	5.00E-07	3.11E-07		6.88E-07		3.7E-02	NHL+liver	1E-08		3E-08		**4E-08**
												Total Dermal:	**6E-08**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	RME child	RME adult
HIFc (mg-L/ug-m^3)	4.11E-05	1.37E-04

COPC	CASRN	EPCmax GW (ug/L)	Exp. Conc. (ug/m^3)				Inhalation IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.5	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	0.5	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
												Total Inhalation:	**5E-07**

NHL = non-Hodkins lymphoma

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-34D**

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	RME child	RME adult		RME lifetime
HIFnc (L/kg BW/day)	4.99E-02	3.00E-02	HIFc (L/kg BW/day)	1.28E-02

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Daily Intake (mg/kg/day)		Oral RfD (mg/kg/day)	Hazard Quotient		Daily Intake (mg/kg/day)	SFo (mg/kg/day)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	4.99E-04	3.00E-04	5E-03	**1E-01**	**6E-02**	1.28E-04	-		---
BENZENE	71-43-2	5.00E-01	N	2.49E-05	1.50E-05	4E-03	**6E-03**	**4E-03**	6.42E-06	6E-02		**4E-07**
BROMODICHLOROMETHANE	75-27-4	5.00E-01	N	2.49E-05	1.50E-05	8E-03	**3E-03**	**2E-03**	6.42E-06	6E-02		**4E-07**
CHLOROFORM	67-66-3	5.00E-01	N	2.49E-05	1.50E-05	1E-02	**2E-03**	**1E-03**	6.42E-06	3E-02		**2E-07**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	2.49E-05	1.50E-05	2E-03	**1E-02**	**7E-03**	6.42E-06	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	2.49E-05	1.50E-05	2E-02	**1E-03**	**7E-04**	6.42E-06	8E-02		**5E-07**
ETHYLBENZENE	100-41-4	5.00E-01	N	2.49E-05	1.50E-05	5E-02	**5E-04**	**3E-04**	6.42E-06	1E-02		**7E-08**
TETRACHLOROETHENE	127-18-4	5.00E-01	N	2.49E-05	1.50E-05	6E-03	**4E-03**	**2E-03**	6.42E-06	2E-03		**1E-08**
TRICHLOROETHENE	79-01-6	5.00E-01	N	2.49E-05	1.50E-05	5E-04	**5E-02**	**3E-02**	M	TCE	M	**4E-07**
1,4-DIOXANE	123-91-1	2.10E-01	N	1.05E-05	6.29E-06	3E-02	**3E-04**	**2E-04**	2.70E-06	1E-01		**3E-07**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA	NA	---	---	2E-02	---	---	---	1E-02		---
						Total Ingestion:	**2E-01**	**1E-01**				**2E-06**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	RME child	RME adult		RME lifetime
HIFnc (cm^2-event/kg/d)	4.07E+02	2.36E+02	HIFc (cm^2-event/kg/d)	1.02E+02

COPC	CASRN	EPCmax GW (mg/cm^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				DAD (mg/kg/d)		Dermal RfD (mg/kg/d)	Hazard Quotient		DAD (mg/kg/d)	Dermal SF (mg/kg/d)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E-05	N	1.82E-05	1.21E-05	5E-03	**4E-03**	**2E-03**	5.07E-06	-		---
BENZENE	71-43-2	5.00E-07	N	3.30E-06	2.19E-06	4E-03	**8E-04**	**5E-04**	9.23E-07	6E-02		**5E-08**
BROMODICHLOROMETHANE	75-27-4	5.00E-07	N	1.55E-06	1.03E-06	8E-03	**2E-04**	**1E-04**	4.33E-07	6E-02		**3E-08**
CHLOROFORM	67-66-3	5.00E-07	N	1.98E-06	1.31E-06	1E-02	**2E-04**	**1E-04**	5.52E-07	3E-02		**2E-08**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-07	N	2.75E-06	1.83E-06	2E-03	**1E-03**	**9E-04**	7.69E-07	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-07	N	1.48E-06	9.84E-07	2E-02	**7E-05**	**5E-05**	4.14E-07	8E-02		**3E-08**
ETHYLBENZENE	100-41-4	5.00E-07	N	1.31E-05	8.69E-06	5E-02	**3E-04**	**2E-04**	3.66E-06	1E-02		**4E-08**
TETRACHLOROETHENE	127-18-4	5.00E-07	N	1.30E-05	8.65E-06	6E-03	**2E-03**	**1E-03**	3.64E-06	2E-03		**8E-09**
TRICHLOROETHENE	79-01-6	5.00E-07	N	3.63E-06	2.41E-06	5E-04	**7E-03**	**5E-03**	M	TCE	M	**6E-08**
1,4-DIOXANE	123-91-1	2.10E-07	N	3.30E-08	2.19E-08	3E-02	**1E-06**	**7E-07**	9.22E-09	1E-01		**9E-10**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	NA [a]		---	---	2E-02	---	---	---	1E-02		---
						Total Dermal:	**2E-02**	**1E-02**				**2E-07**

[a] Not assessed quantitatively per RAGS Part E because partition coefficients are outside the effective prediction domain (EPD)

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**MW-34D**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	RME child	RME adult		RME lifetime
HIFnc (mg-L/ug-m^3)	4.79E-04	4.79E-04	HIFc (mg-L/ug-m^3)	1.78E-04

COPC	CASRN	EPCmax GW (ug/L)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				EC (mg/m^3)		Inhalation RfC (mg/m^3)	Hazard Quotient		EC (ug/m^3)	Inhalation IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
2-HEXANONE	591-78-6	1.00E+01	N	4.79E-03	4.79E-03	3E-02	**2E-01**	**2E-01**	1.78E+00	-		---
BENZENE	71-43-2	5.00E-01	N	2.40E-04	2.40E-04	3E-02	**8E-03**	**8E-03**	8.90E-02	8E-06		**7E-07**
BROMODICHLOROMETHANE	75-27-4	5.00E-01	N	2.40E-04	2.40E-04	-	---	---	8.90E-02	4E-05		**3E-06**
CHLOROFORM	67-66-3	5.00E-01	N	2.40E-04	2.40E-04	1E-01	**2E-03**	**2E-03**	8.90E-02	2E-05		**2E-06**
CIS-1,2-DICHLOROETHENE	156-59-2	5.00E-01	N	2.40E-04	2.40E-04	-	---	---	8.90E-02	-		---
DIBROMOCHLOROMETHANE	124-48-1	5.00E-01	N	2.40E-04	2.40E-04	-	---	---	8.90E-02	-		---
ETHYLBENZENE	100-41-4	5.00E-01	N	2.40E-04	2.40E-04	1E+00	**2E-04**	**2E-04**	8.90E-02	3E-06		**2E-07**
TETRACHLOROETHENE	127-18-4	5.00E-01	N	2.40E-04	2.40E-04	4E-02	**6E-03**	**6E-03**	8.90E-02	3E-07		**2E-08**
TRICHLOROETHENE	79-01-6	5.00E-01	N	2.40E-04	2.40E-04	2E-03	**1E-01**	**1E-01**	M	TCE	M	**5E-07**
1,4-DIOXANE	123-91-1	2.10E-01	N	1.01E-04	1.01E-04	3E-02	**3E-03**	**3E-03**	3.74E-02	5E-06		**2E-07**
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	Not a Volatile COPC		---	---	-	---	---	---	2E-06		---
						Total Inhalation:	**3E-01**	**3E-01**				**7E-06**

		HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential MW-34D	**Total Ingestion**	**2E-01**	**1E-01**	**2E-06**
	Total Dermal Contact	**2E-02**	**1E-02**	**2E-07**
	Total Inhalation	**3E-01**	**3E-01**	**7E-06**
	ALL PATHWAYS	**5E-01**	**4E-01**	**9E-06**
	Based on NDs only	**5E-01**	**4E-01**	**9E-06**
	Based on Detects only	**All ND**	**All ND**	**All ND**
	Site-related only	**2E-01**	**2E-01**	**2E-06**

ATTACHMENT H.5. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR GROUNDWATER AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**MW-34D**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Ingestion of Potable Groundwater as Drinking Water

	RME child	RME adult
HIFc (L/kg BW/day)	4.27E-03	8.56E-03

COPC	CASRN	EPCmax GW (mg/L)	Daily Intake (mg/kg/day)				Oral SF $(mg/kg/day)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.0005	7.12E-06	4.27E-06	6.42E-06	2.14E-06	9.3E-03	kidney	7E-08	4E-08	6E-08	2E-08	**2E-07**
TRICHLOROETHENE	79-01-6	0.0005	2.14E-06		4.28E-06		3.7E-02	NHL+liver	8E-08		2E-07		**2E-07**
												Total Ingestion:	**4E-07**

Pathway:
Dermal Contact with Potable Groundwater (e.g., showering)

	RME child	RME adult
HIFc (cm^2-event/kg/d)	3.49E+01	6.73E+01

COPC	CASRN	EPCmax GW (mg/cm^3)	DAD (mg/kg/d)				Dermal SF $(mg/kg/d)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	5.00E-07	1.04E-06	6.21E-07	1.03E-06	3.44E-07	9.3E-03	kidney	1E-08	6E-09	1E-08	3E-09	**3E-08**
TRICHLOROETHENE	79-01-6	5.00E-07	3.11E-07		6.88E-07		3.7E-02	NHL+liver	1E-08		3E-08		**4E-08**
												Total Dermal:	**6E-08**

Pathway:
Inhalation of Potable Groundwater due to domestic use (e.g., showering)

	RME child	RME adult
HIFc (mg-L/ug-m^3)	4.11E-05	1.37E-04

COPC	CASRN	EPCmax GW (ug/L)	Exp. Conc. (ug/m^3)				Inhalation IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
TRICHLOROETHENE	79-01-6	0.5	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	0.5	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
												Total Inhalation:	**5E-07**

NHL = non-Hodkins lymphoma

Attachment H.6

Detailed Human Health Risk Calculations for Indoor Air

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0001H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	1.27E-02	---	NA	---	---	1.09E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	1.66E-01	N	4.09E-03	---	2.00E+00	**2E-03**	---	3.51E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	2.22E-03	---	3.00E+01	**7E-05**	---	1.90E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	3.84E-02	---	2.00E+00	**2E-02**	---	3.29E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	1.85E-02	---	6.00E+01	**3E-04**	---	1.59E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	1.30E+00	Y	3.21E-02	---	7.00E+00	**5E-03**	---	2.75E-03	2.60E-05		**7E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	1.85E-02	---	6.00E+01	**3E-04**	---	1.59E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	2.22E-02	---	8.00E+02	**3E-05**	---	1.91E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	6.50E-01	Y	1.60E-02	---	3.00E+01	**5E-04**	---	1.37E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	2.36E-02	---	1.00E+00	**2E-02**	---	2.02E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	1.24E-02	---	NA	---	---	1.06E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	2.91E-01	N	7.18E-03	---	5.00E+00	**1E-03**	---	6.15E-04	-		**---**
CARBON TETRACHLORIDE	56-23-5	1.10E+00	Y	2.71E-02	---	1.00E+02	**3E-04**	---	2.33E-03	6.00E-06		**1E-08**
CHLOROFORM	67-66-3	1.30E+00	Y	3.21E-02	---	9.77E+01	**3E-04**	---	2.75E-03	2.30E-05		**6E-08**
ETHYL ACETATE	141-78-6	2.10E+01	Y	5.18E-01	---	7.00E+01	**7E-03**	---	4.44E-02	-		**---**
ETHYLBENZENE	100-41-4	2.52E+00	Y	6.21E-02	---	1.00E+03	**6E-05**	---	5.32E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	3.95E-02	---	NA	---	---	3.38E-03	2.20E-05		**7E-08**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
M,P-XYLENE	108-38-3	9.55E+00	Y	2.36E-01	---	1.00E+02	**2E-03**	---	2.02E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	1.94E+00	Y	4.80E-02	---	6.00E+02	**8E-05**	---	4.11E-03	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.43E+00	Y	5.99E-02	---	1.00E+02	**6E-04**	---	5.14E-03	-		**---**
TETRACHLOROETHENE	127-18-4	5.15E+00	Y	1.27E-01	---	4.00E+01	**3E-03**	---	1.09E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	6.17E-03	---	2.00E+00	**3E-03**	---	5.29E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	3.52E-01	N	8.68E-03	---	2.00E+02	**4E-05**	---	7.44E-04	-		**---**
VINYL CHLORIDE	75-01-4	1.74E-01	Y	4.28E-03	---	8.00E+01	**5E-05**	---	3.67E-04	4.40E-06	M	**9E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0001H**	**Total Inhalation**	**1E-01**	**0E+00**	**1E-06**
		Based on NDs only	**1E-01**	**0E+00**	**1E-06**
		Based on Detects only	**2E-02**	**All ND**	**2E-07**
		Site-related only	**6E-03**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0001H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.94E+00	1.37E-02	8.22E-03	NA	NA	1.0E-08		1E-10	8E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.76E-03	1.06E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.29E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	1.74E-01	1.22E-03	7.35E-04	NA	NA	4.4E-06		5E-09	3E-09	---	---	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0002H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	1.27E-02	---	NA	---	---	1.09E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	1.66E-01	N	4.09E-03	---	2.00E+00	**2E-03**	---	3.51E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	2.22E-03	---	3.00E+01	**7E-05**	---	1.90E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	3.84E-02	---	2.00E+00	**2E-02**	---	3.29E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	1.85E-02	---	6.00E+01	**3E-04**	---	1.59E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	7.52E-03	---	7.00E+00	**1E-03**	---	6.45E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	1.85E-02	---	6.00E+01	**3E-04**	---	1.59E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	2.22E-02	---	8.00E+02	**3E-05**	---	1.91E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	5.50E-01	Y	1.36E-02	---	3.00E+01	**5E-04**	---	1.16E-03	7.80E-06		**9E-09**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	2.36E-02	---	1.00E+00	**2E-02**	---	2.02E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	1.24E-02	---	NA	---	---	1.06E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	2.91E-01	N	7.18E-03	---	5.00E+00	**1E-03**	---	6.15E-04	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	1.16E-02	---	1.00E+02	**1E-04**	---	9.97E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	1.32E+00	Y	3.25E-02	---	9.77E+01	**3E-04**	---	2.79E-03	2.30E-05		**6E-08**
ETHYL ACETATE	141-78-6	1.84E+01	Y	4.53E-01	---	7.00E+01	**6E-03**	---	3.88E-02	-		---
ETHYLBENZENE	100-41-4	7.38E-01	Y	1.82E-02	---	1.00E+03	**2E-05**	---	1.56E-03	2.50E-06		**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	3.95E-02	---	NA	---	---	3.38E-03	2.20E-05		**7E-08**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	5.40E+00	Y	1.33E-01	---	1.00E+02	**1E-03**	---	1.14E-02	-		---
METHYLENE CHLORIDE	75-09-2	8.68E+00	Y	2.14E-01	---	6.00E+02	**4E-04**	---	1.83E-02	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	9.70E-01	Y	2.39E-02	---	1.00E+02	**2E-04**	---	2.05E-03	-		---
TETRACHLOROETHENE	127-18-4	1.42E+00	Y	3.51E-02	---	4.00E+01	**9E-04**	---	3.01E-03	2.60E-07		**8E-10**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	7.15E-03	---	2.00E+00	**4E-03**	---	6.13E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	3.52E-01	N	8.68E-03	---	2.00E+02	**4E-05**	---	7.44E-04	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	1.60E-03	---	8.00E+01	**2E-05**	---	1.37E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0002H**	**Total Inhalation**	**1E-01**	**0E+00**	**1E-06**
		Based on NDs only	**1E-01**	**0E+00**	**1E-06**
		Based on Detects only	**1E-02**	**All ND**	**8E-08**
		Site-related only	**5E-03**	**0E+00**	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0002H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.68E+00	6.12E-02	3.67E-02	NA	NA	1.0E-08		6E-10	4E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	2.90E-01	2.04E-03	1.23E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.90E-01	6.13E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	4.58E-04	2.75E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0003H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	3.30E+00	Y	8.14E-02	---	NA	---	---	6.98E-03	5.80E-05		**4E-07**
1,3-BUTADIENE	106-99-0	2.90E-01	Y	7.15E-03	---	2.00E+00	**4E-03**	---	6.13E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	2.95E-01	N	7.28E-03	---	3.00E+01	**2E-04**	---	6.24E-04	5.00E-06		**3E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	2.74E-02	---	2.00E+00	**1E-02**	---	2.35E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.60E+01	Y	6.42E-01	---	6.00E+01	**1E-02**	---	5.51E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	2.00E-01	Y	4.93E-03	---	7.00E+00	**7E-04**	---	4.23E-04	2.60E-05		**1E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	7.90E+00	Y	1.95E-01	---	6.00E+01	**3E-03**	---	1.67E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	1.11E-02	---	8.00E+02	**1E-05**	---	9.53E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	2.20E+01	Y	5.43E-01	---	3.00E+01	**2E-02**	---	4.66E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	1.97E-02	---	1.00E+00	**2E-02**	---	1.69E-03	4.90E-05		**8E-08**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	1.24E-02	---	NA	---	---	1.06E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	5.00E-01	N	1.23E-02	---	5.00E+00	**2E-03**	---	1.06E-03	-		---
CARBON TETRACHLORIDE	56-23-5	6.30E-01	Y	1.55E-02	---	1.00E+02	**2E-04**	---	1.33E-03	6.00E-06		**8E-09**
CHLOROFORM	67-66-3	4.73E+01	Y	1.17E+00	---	9.77E+01	**1E-02**	---	1.00E-01	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	1.44E+01	Y	3.55E-01	---	7.00E+01	**5E-03**	---	3.05E-02	-		---
ETHYLBENZENE	100-41-4	1.30E+01	Y	3.21E-01	---	1.00E+03	**3E-04**	---	2.75E-02	2.50E-06		**7E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	3.95E-02	---	NA	---	---	3.38E-03	2.20E-05		**7E-08**
ISOPROPYL ALCOHOL	67-63-0	2.60E+01	Y	6.41E-01	---	2.00E+02	**3E-03**	---	5.50E-02	-		---
M,P-XYLENE	108-38-3	6.95E+01	Y	1.71E+00	---	1.00E+02	**2E-02**	---	1.47E-01	-		---
METHYLENE CHLORIDE	75-09-2	9.50E-01	Y	2.34E-02	---	6.00E+02	**4E-05**	---	2.01E-03	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	7.00E-02	Y	1.73E-03	---	3.00E+00	**6E-04**	---	1.48E-04	3.40E-05		**5E-09**
O-XYLENE	95-47-6	2.20E+01	Y	5.43E-01	---	1.00E+02	**5E-03**	---	4.65E-02	-		---
TETRACHLOROETHENE	127-18-4	1.70E+01	Y	4.19E-01	---	4.00E+01	**1E-02**	---	3.59E-02	2.60E-07		**9E-09**
TRICHLOROETHENE	79-01-6	4.10E-02	Y	1.01E-03	---	2.00E+00	**5E-04**	---	8.67E-05	4.10E-06	M	**7E-10**
VINYL ACETATE	108-05-4	2.65E-01	N	6.54E-03	---	2.00E+02	**3E-05**	---	5.60E-04	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	4.73E-03	---	8.00E+01	**6E-05**	---	4.05E-04	4.40E-06	M	**1E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0003H**	**Total Inhalation**	**2E-01**	**0E+00**	**4E-06**
		Based on NDs only	**9E-02**	**0E+00**	**1E-06**
		Based on Detects only	**9E-02**	**All ND**	**3E-06**
		Site-related only	**1E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0003H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.50E-01	6.70E-03	4.02E-03	NA	NA	1.0E-08		7E-11	4E-11	---	---	**1E-10**
TRICHLOROETHENE	79-01-6	4.10E-02	2.89E-04	1.73E-04	NA	NA	1.0E-06	kidney	3E-10	2E-10	---	---	**5E-10**
TRICHLOROETHENE	79-01-6	4.10E-02	8.67E-05		NA		3.1E-06	NHL+liver	3E-10		---		**3E-10**
VINYL CHLORIDE	75-01-4	1.92E-01	1.35E-03	8.10E-04	NA	NA	4.4E-06		6E-09	4E-09	---	---	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0004H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	1.27E-02	---	NA	---	---	1.09E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	1.66E-01	N	4.09E-03	---	2.00E+00	**2E-03**	---	3.51E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	2.22E-03	---	3.00E+01	**7E-05**	---	1.90E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	3.84E-02	---	2.00E+00	**2E-02**	---	3.29E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	1.85E-02	---	6.00E+01	**3E-04**	---	1.59E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	7.52E-03	---	7.00E+00	**1E-03**	---	6.45E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	1.85E-02	---	6.00E+01	**3E-04**	---	1.59E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	2.22E-02	---	8.00E+02	**3E-05**	---	1.91E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	6.71E-01	Y	1.65E-02	---	3.00E+01	**6E-04**	---	1.42E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	2.36E-02	---	1.00E+00	**2E-02**	---	2.02E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	1.24E-02	---	NA	---	---	1.06E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	2.91E-01	N	7.18E-03	---	5.00E+00	**1E-03**	---	6.15E-04	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	1.16E-02	---	1.00E+02	**1E-04**	---	9.97E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	8.50E-01	Y	2.10E-02	---	9.77E+01	**2E-04**	---	1.80E-03	2.30E-05		**4E-08**
ETHYL ACETATE	141-78-6	1.60E+00	Y	3.95E-02	---	7.00E+01	**6E-04**	---	3.38E-03	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	8.03E-03	---	1.00E+03	**8E-06**	---	6.88E-04	2.50E-06		**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	3.95E-02	---	NA	---	---	3.38E-03	2.20E-05		**7E-08**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	9.99E-01	Y	2.46E-02	---	1.00E+02	**2E-04**	---	2.11E-03	-		---
METHYLENE CHLORIDE	75-09-2	2.10E+00	Y	5.18E-02	---	6.00E+02	**9E-05**	---	4.44E-03	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	8.03E-03	---	1.00E+02	**8E-05**	---	6.88E-04	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	8.63E-03	---	4.00E+01	**2E-04**	---	7.40E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	6.17E-03	---	2.00E+00	**3E-03**	---	5.29E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	3.52E-01	N	8.68E-03	---	2.00E+02	**4E-05**	---	7.44E-04	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	1.60E-03	---	8.00E+01	**2E-05**	---	1.37E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0004H**	**Total Inhalation**	**1E-01**	**0E+00**	**1E-06**
		Based on NDs only	**1E-01**	**0E+00**	**1E-06**
		Based on Detects only	**2E-03**	**All ND**	**5E-08**
		Site-related only	**3E-03**	**0E+00**	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0004H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.10E+00	1.48E-02	8.88E-03	NA	NA	1.0E-08		1E-10	9E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.76E-03	1.06E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.29E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	4.58E-04	2.75E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0008H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	1.27E-02	---	NA	---	---	1.09E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	1.66E-01	N	4.09E-03	---	2.00E+00	**2E-03**	---	3.51E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	2.74E-02	---	2.00E+00	**1E-02**	---	2.35E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.70E+01	Y	6.67E-01	---	6.00E+01	**1E-02**	---	5.71E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	7.52E-03	---	7.00E+00	**1E-03**	---	6.45E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	8.84E+00	Y	2.18E-01	---	6.00E+01	**4E-03**	---	1.87E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	1.11E-02	---	8.00E+02	**1E-05**	---	9.53E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	3.51E+01	Y	8.66E-01	---	3.00E+01	**3E-02**	---	7.43E-02	7.80E-06		**6E-07**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	1.97E-02	---	1.00E+00	**2E-02**	---	1.69E-03	4.90E-05		**8E-08**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	1.24E-02	---	NA	---	---	1.06E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	2.91E-01	N	7.18E-03	---	5.00E+00	**1E-03**	---	6.15E-04	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	1.16E-02	---	1.00E+02	**1E-04**	---	9.97E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	3.66E-01	N	9.03E-03	---	9.77E+01	**9E-05**	---	7.74E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	2.10E+00	Y	5.18E-02	---	7.00E+01	**7E-04**	---	4.44E-03	-		---
ETHYLBENZENE	100-41-4	2.73E+01	Y	6.74E-01	---	1.00E+03	**7E-04**	---	5.78E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	3.95E-02	---	NA	---	---	3.38E-03	2.20E-05		**7E-08**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.22E+02	Y	3.00E+00	---	1.00E+02	**3E-02**	---	2.57E-01	-		---
METHYLENE CHLORIDE	75-09-2	8.00E-01	Y	1.97E-02	---	6.00E+02	**3E-05**	---	1.69E-03	1.00E-08	M	**9E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	4.04E+01	Y	9.96E-01	---	1.00E+02	**1E-02**	---	8.53E-02	-		---
TETRACHLOROETHENE	127-18-4	2.91E+00	Y	7.19E-02	---	4.00E+01	**2E-03**	---	6.16E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	4.05E-01	N	9.99E-03	---	2.00E+00	**5E-03**	---	8.56E-04	4.10E-06	M	**7E-09**
VINYL ACETATE	108-05-4	2.65E-01	N	6.54E-03	---	2.00E+02	**3E-05**	---	5.60E-04	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	4.73E-03	---	8.00E+01	**6E-05**	---	4.05E-04	4.40E-06	M	**1E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0008H**	**Total Inhalation**	**2E-01**	**0E+00**	**2E-06**
		Based on NDs only	**1E-01**	**0E+00**	**1E-06**
		Based on Detects only	**9E-02**	**All ND**	**7E-07**
		Site-related only	**7E-03**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0008H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.00E-01	5.64E-03	3.38E-03	NA	NA	1.0E-08		6E-11	3E-11	---	---	**9E-11**
TRICHLOROETHENE	79-01-6	4.05E-01	2.85E-03	1.71E-03	NA	NA	1.0E-06	kidney	3E-09	2E-09	---	---	**5E-09**
TRICHLOROETHENE	79-01-6	4.05E-01	8.56E-04		NA		3.1E-06	NHL+liver	3E-09		---		**3E-09**
VINYL CHLORIDE	75-01-4	1.92E-01	1.35E-03	8.10E-04	NA	NA	4.4E-06		6E-09	4E-09	---	---	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0011H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	1.27E-02	---	NA	---	---	1.09E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	1.40E-01	Y	3.45E-03	---	2.00E+00	**2E-03**	---	2.96E-04	3.00E-05		**9E-09**
1,4-DIOXANE	123-91-1	1.70E-01	Y	4.19E-03	---	3.00E+01	**1E-04**	---	3.59E-04	5.00E-06		**2E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.45E+00	N	3.58E-02	---	2.00E+00	**2E-02**	---	3.07E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.60E-01	Y	8.88E-03	---	6.00E+01	**1E-04**	---	7.61E-04	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	1.20E-01	Y	2.96E-03	---	7.00E+00	**4E-04**	---	2.54E-04	2.60E-05		**7E-09**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	9.13E-03	---	6.00E+01	**2E-04**	---	7.82E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	1.11E-02	---	8.00E+02	**1E-05**	---	9.53E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	8.60E-01	Y	2.12E-02	---	3.00E+01	**7E-04**	---	1.82E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	2.71E-03	---	1.00E+00	**3E-03**	---	2.33E-04	4.90E-05		**1E-08**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	1.24E-02	---	NA	---	---	1.06E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	3.70E-01	N	9.13E-03	---	5.00E+00	**2E-03**	---	7.82E-04	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	1.13E-02	---	1.00E+02	**1E-04**	---	9.73E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	5.50E-01	Y	1.36E-02	---	9.77E+01	**1E-04**	---	1.16E-03	2.30E-05		**3E-08**
ETHYL ACETATE	141-78-6	1.62E+00	Y	4.00E-02	---	7.00E+01	**6E-04**	---	3.43E-03	-		---
ETHYLBENZENE	100-41-4	4.70E-01	Y	1.16E-02	---	1.00E+03	**1E-05**	---	9.94E-04	2.50E-06		**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.95E+00	N	4.81E-02	---	NA	---	---	4.12E-03	2.20E-05		**9E-08**
ISOPROPYL ALCOHOL	67-63-0	5.90E+00	Y	1.46E-01	---	2.00E+02	**7E-04**	---	1.25E-02	-		---
M,P-XYLENE	108-38-3	1.20E+00	Y	2.96E-02	---	1.00E+02	**3E-04**	---	2.54E-03	-		---
METHYLENE CHLORIDE	75-09-2	3.82E+00	Y	9.42E-02	---	6.00E+02	**2E-04**	---	8.07E-03	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	4.65E-02	N	1.15E-03	---	3.00E+00	**4E-04**	---	9.83E-05	3.40E-05		**3E-09**
O-XYLENE	95-47-6	4.50E-01	Y	1.11E-02	---	1.00E+02	**1E-04**	---	9.51E-04	-		---
TETRACHLOROETHENE	127-18-4	1.90E+01	Y	4.69E-01	---	4.00E+01	**1E-02**	---	4.02E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	5.80E-02	Y	1.43E-03	---	2.00E+00	**7E-04**	---	1.23E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	2.65E-01	N	6.54E-03	---	2.00E+02	**3E-05**	---	5.60E-04	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	1.60E-03	---	8.00E+01	**2E-05**	---	1.37E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0011H**	**Total Inhalation**	**1E-01**	**0E+00**	**1E-06**
		Based on NDs only	**8E-02**	**0E+00**	**1E-06**
		Based on Detects only	**2E-02**	**All ND**	**8E-08**
		Site-related only	**1E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0011H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.82E+00	2.69E-02	1.61E-02	NA	NA	1.0E-08		3E-10	2E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	5.80E-02	4.09E-04	2.45E-04	NA	NA	1.0E-06	kidney	4E-10	2E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	5.80E-02	1.23E-04		NA		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	6.50E-02	4.58E-04	2.75E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0012H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	1.27E-02	---	NA	---	---	1.09E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	1.66E-01	N	4.09E-03	---	2.00E+00	**2E-03**	---	3.51E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	2.22E-03	---	3.00E+01	**7E-05**	---	1.90E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	3.84E-02	---	2.00E+00	**2E-02**	---	3.29E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	1.85E-02	---	6.00E+01	**3E-04**	---	1.59E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	7.52E-03	---	7.00E+00	**1E-03**	---	6.45E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	1.85E-02	---	6.00E+01	**3E-04**	---	1.59E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	2.22E-02	---	8.00E+02	**3E-05**	---	1.91E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	6.39E-01	Y	1.58E-02	---	3.00E+01	**5E-04**	---	1.35E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	2.36E-02	---	1.00E+00	**2E-02**	---	2.02E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	1.24E-02	---	NA	---	---	1.06E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	2.91E-01	N	7.18E-03	---	5.00E+00	**1E-03**	---	6.15E-04	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	1.16E-02	---	1.00E+02	**1E-04**	---	9.97E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	1.51E+00	Y	3.73E-02	---	9.77E+01	**4E-04**	---	3.20E-03	2.30E-05		**7E-08**
ETHYL ACETATE	141-78-6	6.48E+00	Y	1.60E-01	---	7.00E+01	**2E-03**	---	1.37E-02	-		---
ETHYLBENZENE	100-41-4	1.13E+00	Y	2.78E-02	---	1.00E+03	**3E-05**	---	2.39E-03	2.50E-06		**6E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	3.95E-02	---	NA	---	---	3.38E-03	2.20E-05		**7E-08**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	3.73E+00	Y	9.20E-02	---	1.00E+02	**9E-04**	---	7.89E-03	-		---
METHYLENE CHLORIDE	75-09-2	1.11E+00	Y	2.74E-02	---	6.00E+02	**5E-05**	---	2.35E-03	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	9.98E-01	Y	2.46E-02	---	1.00E+02	**2E-04**	---	2.11E-03	-		---
TETRACHLOROETHENE	127-18-4	2.58E+00	Y	6.36E-02	---	4.00E+01	**2E-03**	---	5.45E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	6.17E-03	---	2.00E+00	**3E-03**	---	5.29E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	3.52E-01	N	8.68E-03	---	2.00E+02	**4E-05**	---	7.44E-04	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	1.60E-03	---	8.00E+01	**2E-05**	---	1.37E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0012H**	**Total Inhalation**	**1E-01**	**0E+00**	**1E-06**
		Based on NDs only	**1E-01**	**0E+00**	**1E-06**
		Based on Detects only	**6E-03**	**All ND**	**9E-08**
		Site-related only	**5E-03**	**0E+00**	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0012H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.11E+00	7.83E-03	4.70E-03	NA	NA	1.0E-08		8E-11	5E-11	---	---	**1E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.76E-03	1.06E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.29E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	4.58E-04	2.75E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0013H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	1.27E-02	---	NA	---	---	1.09E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	1.66E-01	N	4.09E-03	---	2.00E+00	**2E-03**	---	3.51E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	9.50E-02	N	2.34E-03	---	3.00E+01	**8E-05**	---	2.01E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	3.84E-02	---	2.00E+00	**2E-02**	---	3.29E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	1.85E-02	---	6.00E+01	**3E-04**	---	1.59E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	1.30E-01	Y	3.21E-03	---	7.00E+00	**5E-04**	---	2.75E-04	2.60E-05		**7E-09**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	1.85E-02	---	6.00E+01	**3E-04**	---	1.59E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	2.22E-02	---	8.00E+02	**3E-05**	---	1.91E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	6.20E-01	Y	1.53E-02	---	3.00E+01	**5E-04**	---	1.31E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	2.36E-02	---	1.00E+00	**2E-02**	---	2.02E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	1.24E-02	---	NA	---	---	1.06E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	6.50E-01	N	1.60E-02	---	5.00E+00	**3E-03**	---	1.37E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	1.04E-02	---	1.00E+02	**1E-04**	---	8.88E-04	6.00E-06		**5E-09**
CHLOROFORM	67-66-3	3.50E-01	Y	8.63E-03	---	9.77E+01	**9E-05**	---	7.40E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	5.50E-01	N	1.36E-02	---	7.00E+01	**2E-04**	---	1.16E-03	-		---
ETHYLBENZENE	100-41-4	1.80E-01	Y	4.44E-03	---	1.00E+03	**4E-06**	---	3.81E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	3.95E-02	---	NA	---	---	3.38E-03	2.20E-05		**7E-08**
ISOPROPYL ALCOHOL	67-63-0	2.10E+01	Y	5.18E-01	---	2.00E+02	**3E-03**	---	4.44E-02	-		---
M,P-XYLENE	108-38-3	1.52E+00	Y	3.75E-02	---	1.00E+02	**4E-04**	---	3.21E-03	-		---
METHYLENE CHLORIDE	75-09-2	2.40E+00	Y	5.92E-02	---	6.00E+02	**1E-04**	---	5.07E-03	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.40E-01	Y	3.45E-03	---	1.00E+02	**3E-05**	---	2.96E-04	-		---
TETRACHLOROETHENE	127-18-4	7.00E-02	Y	1.73E-03	---	4.00E+01	**4E-05**	---	1.48E-04	2.60E-07		**4E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	6.17E-03	---	2.00E+00	**3E-03**	---	5.29E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	3.00E+00	Y	7.40E-02	---	2.00E+02	**4E-04**	---	6.34E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	1.60E-03	---	8.00E+01	**2E-05**	---	1.37E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0013H**	**Total Inhalation**	**1E-01**	**0E+00**	**1E-06**
		Based on NDs only	**1E-01**	**0E+00**	**1E-06**
		Based on Detects only	**5E-03**	**All ND**	**4E-08**
		Site-related only	**3E-03**	**0E+00**	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0013H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.40E+00	1.69E-02	1.01E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.76E-03	1.06E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.29E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	4.58E-04	2.75E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0017H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	1.27E-02	---	NA	---	---	1.09E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	1.66E-01	N	4.09E-03	---	2.00E+00	**2E-03**	---	3.51E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	2.22E-03	---	3.00E+01	**7E-05**	---	1.90E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	9.83E-01	Y	2.42E-02	---	6.00E+01	**4E-04**	---	2.08E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	7.52E-03	---	7.00E+00	**1E-03**	---	6.45E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	9.13E-03	---	6.00E+01	**2E-04**	---	7.82E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	1.11E-02	---	8.00E+02	**1E-05**	---	9.53E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	8.00E-01	Y	1.97E-02	---	3.00E+01	**7E-04**	---	1.69E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	1.24E-02	---	NA	**---**	**---**	1.06E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	2.91E-01	N	7.18E-03	---	5.00E+00	**1E-03**	---	6.15E-04	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	1.16E-02	---	1.00E+02	**1E-04**	---	9.97E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	1.61E+00	Y	3.97E-02	---	9.77E+01	**4E-04**	---	3.40E-03	2.30E-05		**8E-08**
ETHYL ACETATE	141-78-6	3.30E+00	Y	8.14E-02	---	7.00E+01	**1E-03**	---	6.98E-03	-		**---**
ETHYLBENZENE	100-41-4	3.25E-01	N	8.03E-03	---	1.00E+03	**8E-06**	---	6.88E-04	2.50E-06		**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.04E+00	Y	5.03E-02	---	1.00E+02	**5E-04**	---	4.31E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	8.33E-01	Y	2.06E-02	---	6.00E+02	**3E-05**	---	1.76E-03	1.00E-08	M	**9E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	3.25E-01	N	8.03E-03	---	1.00E+02	**8E-05**	---	6.88E-04	-		**---**
TETRACHLOROETHENE	127-18-4	1.02E+01	Y	2.51E-01	---	4.00E+01	**6E-03**	---	2.15E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	3.92E-01	Y	9.67E-03	---	2.00E+00	**5E-03**	---	8.29E-04	4.10E-06	M	**7E-09**
VINYL ACETATE	108-05-4	2.65E-01	N	6.54E-03	---	2.00E+02	**3E-05**	---	5.60E-04	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	1.60E-03	---	8.00E+01	**2E-05**	---	1.37E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0017H**	**Total Inhalation**	**7E-02**	**0E+00**	**1E-06**
		Based on NDs only	**6E-02**	**0E+00**	**9E-07**
		Based on Detects only	**1E-02**	**All ND**	**1E-07**
		Site-related only	**1E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0017H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.33E-01	5.87E-03	3.52E-03	NA	NA	1.0E-08		6E-11	4E-11	---	---	**9E-11**
TRICHLOROETHENE	79-01-6	3.92E-01	2.76E-03	1.66E-03	NA	NA	1.0E-06	kidney	3E-09	2E-09	---	---	**4E-09**
TRICHLOROETHENE	79-01-6	3.92E-01	8.29E-04		NA		3.1E-06	NHL+liver	3E-09		---		**3E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	4.58E-04	2.75E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0018H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-01	Y	5.92E-03	---	NA	---	---	5.07E-04	5.80E-05		**3E-08**
1,3-BUTADIENE	106-99-0	4.30E-01	Y	1.06E-02	---	2.00E+00	**5E-03**	---	9.09E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	4.90E-01	Y	1.21E-02	---	3.00E+01	**4E-04**	---	1.04E-03	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.60E+00	Y	1.13E-01	---	2.00E+00	**6E-02**	---	9.73E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.80E+00	Y	6.91E-02	---	6.00E+01	**1E-03**	---	5.92E-03	-		---
1,2-DIBROMOETHANE	106-93-4	9.40E-02	Y	2.32E-03	---	9.00E+00	**3E-04**	---	1.99E-04	6.00E-04		**1E-07**
1,2-DICHLOROETHANE	107-06-2	1.30E+00	Y	3.21E-02	---	7.00E+00	**5E-03**	---	2.75E-03	2.60E-05		**7E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	9.00E-01	Y	2.22E-02	---	6.00E+01	**4E-04**	---	1.90E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.60E-01	Y	1.13E-02	---	8.00E+02	**1E-05**	---	9.73E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	5.60E+00	Y	1.38E-01	---	3.00E+01	**5E-03**	---	1.18E-02	7.80E-06		**9E-08**
BENZYL CHLORIDE	100-44-7	8.40E-01	Y	2.07E-02	---	1.00E+00	**2E-02**	---	1.78E-03	4.90E-05		**9E-08**
BROMODICHLOROMETHANE	75-27-4	4.50E-01	Y	1.11E-02	---	NA	---	---	9.51E-04	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	7.00E-01	N	1.73E-02	---	5.00E+00	**3E-03**	---	1.48E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	1.13E-02	---	1.00E+02	**1E-04**	---	9.73E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	2.40E+00	Y	5.92E-02	---	9.77E+01	**6E-04**	---	5.07E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	4.68E+00	Y	1.15E-01	---	7.00E+01	**2E-03**	---	9.90E-03	-		---
ETHYLBENZENE	100-41-4	2.40E+00	Y	5.92E-02	---	1.00E+03	**6E-05**	---	5.07E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	5.30E+00	Y	1.31E-01	---	NA	---	---	1.12E-02	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	1.30E+02	Y	3.21E+00	---	2.00E+02	**2E-02**	---	2.75E-01	-		---
M,P-XYLENE	108-38-3	1.00E+01	Y	2.47E-01	---	1.00E+02	**2E-03**	---	2.11E-02	-		---
METHYLENE CHLORIDE	75-09-2	1.70E+00	Y	4.19E-02	---	6.00E+02	**7E-05**	---	3.59E-03	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	8.30E+00	Y	2.05E-01	---	3.00E+00	**7E-02**	---	1.75E-02	3.40E-05		**6E-07**
O-XYLENE	95-47-6	3.20E+00	Y	7.89E-02	---	1.00E+02	**8E-04**	---	6.77E-03	-		---
TETRACHLOROETHENE	127-18-4	1.40E+01	Y	3.45E-01	---	4.00E+01	**9E-03**	---	2.96E-02	2.60E-07		**8E-09**
TRICHLOROETHENE	79-01-6	8.30E-01	Y	2.05E-02	---	2.00E+00	**1E-02**	---	1.75E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	6.54E-03	---	2.00E+02	**3E-05**	---	5.60E-04	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	1.60E-03	---	8.00E+01	**2E-05**	---	1.37E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0018H**	**Total Inhalation**	**3E-01**	**0E+00**	**1E-06**
		Based on NDs only	**6E-02**	**0E+00**	**2E-08**
		Based on Detects only	**2E-01**	**All ND**	**1E-06**
		Site-related only	**2E-02**	**0E+00**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0018H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.70E+00	1.20E-02	7.19E-03	NA	NA	1.0E-08		1E-10	7E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	8.30E-01	5.85E-03	3.51E-03	NA	NA	1.0E-06	kidney	6E-09	4E-09	---	---	**9E-09**
TRICHLOROETHENE	79-01-6	8.30E-01	1.75E-03		NA		3.1E-06	NHL+liver	5E-09		---		**5E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	4.58E-04	2.75E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0023H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	1.27E-02	---	NA	---	---	1.09E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	1.66E-01	N	4.09E-03	---	2.00E+00	**2E-03**	---	3.51E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	2.22E-03	---	3.00E+01	**7E-05**	---	1.90E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.70E-01	N	9.13E-03	---	6.00E+01	**2E-04**	---	7.82E-04	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	7.52E-03	---	7.00E+00	**1E-03**	---	6.45E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	9.13E-03	---	6.00E+01	**2E-04**	---	7.82E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	1.11E-02	---	8.00E+02	**1E-05**	---	9.53E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	1.40E+00	Y	3.45E-02	---	3.00E+01	**1E-03**	---	2.96E-03	7.80E-06		**2E-08**
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	1.24E-02	---	NA	---	---	1.06E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	2.91E-01	N	7.18E-03	---	5.00E+00	**1E-03**	---	6.15E-04	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	1.16E-02	---	1.00E+02	**1E-04**	---	9.97E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	3.66E-01	N	9.03E-03	---	9.77E+01	**9E-05**	---	7.74E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	2.70E-01	N	6.66E-03	---	7.00E+01	**1E-04**	---	5.71E-04	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	8.03E-03	---	1.00E+03	**8E-06**	---	6.88E-04	2.50E-06		**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	2.30E+00	Y	5.67E-02	---	1.00E+02	**6E-04**	---	4.86E-03	-		---
METHYLENE CHLORIDE	75-09-2	6.40E-01	Y	1.58E-02	---	6.00E+02	**3E-05**	---	1.35E-03	1.00E-08	M	**7E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	6.94E-01	Y	1.71E-02	---	1.00E+02	**2E-04**	---	1.47E-03	-		---
TETRACHLOROETHENE	127-18-4	1.40E+00	Y	3.45E-02	---	4.00E+01	**9E-04**	---	2.96E-03	2.60E-07		**8E-10**
TRICHLOROETHENE	79-01-6	1.35E-01	N	3.33E-03	---	2.00E+00	**2E-03**	---	2.85E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	2.65E-01	N	6.54E-03	---	2.00E+02	**3E-05**	---	5.60E-04	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	1.60E-03	---	8.00E+01	**2E-05**	---	1.37E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0023H**	**Total Inhalation**	**6E-02**	**0E+00**	**1E-06**
		Based on NDs only	**6E-02**	**0E+00**	**1E-06**
		Based on Detects only	**3E-03**	**All ND**	**2E-08**
		Site-related only	**3E-03**	**0E+00**	**7E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0023H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.40E-01	4.51E-03	2.71E-03	NA	NA	1.0E-08		5E-11	3E-11	---	---	**7E-11**
TRICHLOROETHENE	79-01-6	1.35E-01	9.51E-04	5.71E-04	NA	NA	1.0E-06	kidney	1E-09	6E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	1.35E-01	2.85E-04		NA		3.1E-06	NHL+liver	9E-10		---		**9E-10**
VINYL CHLORIDE	75-01-4	6.50E-02	4.58E-04	2.75E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0025H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	1.27E-02	---	NA	---	---	1.09E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	1.66E-01	N	4.09E-03	---	2.00E+00	**2E-03**	---	3.51E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	2.34E+00	Y	5.77E-02	---	3.00E+01	**2E-03**	---	4.95E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	3.84E-02	---	2.00E+00	**2E-02**	---	3.29E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.60E-01	Y	6.41E-03	---	6.00E+01	**1E-04**	---	5.50E-04	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	3.30E-01	Y	8.14E-03	---	7.00E+00	**1E-03**	---	6.98E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	1.85E-02	---	6.00E+01	**3E-04**	---	1.59E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	2.10E+00	Y	5.18E-02	---	8.00E+02	**6E-05**	---	4.44E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	8.30E-01	Y	2.05E-02	---	3.00E+01	**7E-04**	---	1.75E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	2.36E-02	---	1.00E+00	**2E-02**	---	2.02E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	1.24E-02	---	NA	---	---	1.06E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	8.00E-01	N	1.97E-02	---	5.00E+00	**4E-03**	---	1.69E-03	-		---
CARBON TETRACHLORIDE	56-23-5	5.60E-01	Y	1.38E-02	---	1.00E+02	**1E-04**	---	1.18E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	1.90E+00	Y	4.69E-02	---	9.77E+01	**5E-04**	---	4.02E-03	2.30E-05		**9E-08**
ETHYL ACETATE	141-78-6	3.90E+00	Y	9.62E-02	---	7.00E+01	**1E-03**	---	8.25E-03	-		---
ETHYLBENZENE	100-41-4	2.10E-01	Y	5.18E-03	---	1.00E+03	**5E-06**	---	4.44E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	3.95E-02	---	NA	---	---	3.38E-03	2.20E-05		**7E-08**
ISOPROPYL ALCOHOL	67-63-0	7.70E+00	Y	1.90E-01	---	2.00E+02	**9E-04**	---	1.63E-02	-		---
M,P-XYLENE	108-38-3	1.30E+00	Y	3.21E-02	---	1.00E+02	**3E-04**	---	2.75E-03	-		---
METHYLENE CHLORIDE	75-09-2	3.33E+00	Y	8.22E-02	---	6.00E+02	**1E-04**	---	7.05E-03	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	8.80E-02	Y	2.17E-03	---	3.00E+00	**7E-04**	---	1.86E-04	3.40E-05		**6E-09**
O-XYLENE	95-47-6	3.10E-01	Y	7.65E-03	---	1.00E+02	**8E-05**	---	6.55E-04	-		---
TETRACHLOROETHENE	127-18-4	4.40E-01	Y	1.09E-02	---	4.00E+01	**3E-04**	---	9.30E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	6.17E-03	---	2.00E+00	**3E-03**	---	5.29E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	3.52E-01	N	8.68E-03	---	2.00E+02	**4E-05**	---	7.44E-04	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	1.60E-03	---	8.00E+01	**2E-05**	---	1.37E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0025H**	**Total Inhalation**	**1E-01**	**0E+00**	**1E-06**
		Based on NDs only	**1E-01**	**0E+00**	**1E-06**
		Based on Detects only	**8E-03**	**All ND**	**2E-07**
		Site-related only	**5E-03**	**0E+00**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0025H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.33E+00	2.35E-02	1.41E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.76E-03	1.06E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.29E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	4.58E-04	2.75E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0026H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	1.27E-02	---	NA	---	---	1.09E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	1.66E-01	N	4.09E-03	---	2.00E+00	**2E-03**	---	3.51E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	2.60E-01	Y	6.41E-03	---	3.00E+01	**2E-04**	---	5.50E-04	5.00E-06		**3E-09**
1,1,2-TRICHLOROETHANE	79-00-5	8.80E-01	Y	2.17E-02	---	2.00E-01	**1E-01**	---	1.86E-03	1.60E-05		**3E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	3.84E-02	---	2.00E+00	**2E-02**	---	3.29E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E+00	Y	3.95E-02	---	6.00E+01	**7E-04**	---	3.38E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	3.00E+00	Y	7.40E-02	---	7.00E+00	**1E-02**	---	6.34E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	2.50E-01	Y	6.17E-03	---	6.00E+01	**1E-04**	---	5.29E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	8.40E-02	Y	2.07E-03	---	8.00E+02	**3E-06**	---	1.78E-04	1.10E-05		**2E-09**
BENZENE	71-43-2	7.70E-01	Y	1.90E-02	---	3.00E+01	**6E-04**	---	1.63E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	2.36E-02	---	1.00E+00	**2E-02**	---	2.02E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	6.10E-01	Y	1.50E-02	---	NA	---	---	1.29E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	8.00E-01	N	1.97E-02	---	5.00E+00	**4E-03**	---	1.69E-03	-		---
CARBON TETRACHLORIDE	56-23-5	5.20E-01	Y	1.28E-02	---	1.00E+02	**1E-04**	---	1.10E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	2.60E+00	Y	6.41E-02	---	9.77E+01	**7E-04**	---	5.50E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	5.10E+00	Y	1.26E-01	---	7.00E+01	**2E-03**	---	1.08E-02	-		---
ETHYLBENZENE	100-41-4	2.30E+00	Y	5.67E-02	---	1.00E+03	**6E-05**	---	4.86E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	3.95E-02	---	NA	---	---	3.38E-03	2.20E-05		**7E-08**
ISOPROPYL ALCOHOL	67-63-0	2.90E+01	Y	7.15E-01	---	2.00E+02	**4E-03**	---	6.13E-02	-		---
M,P-XYLENE	108-38-3	9.12E+00	Y	2.25E-01	---	1.00E+02	**2E-03**	---	1.93E-02	-		---
METHYLENE CHLORIDE	75-09-2	2.22E+00	Y	5.48E-02	---	6.00E+02	**9E-05**	---	4.70E-03	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	3.00E-02	N	7.40E-04	---	3.00E+00	**2E-04**	---	6.34E-05	3.40E-05		**2E-09**
O-XYLENE	95-47-6	2.10E+00	Y	5.18E-02	---	1.00E+02	**5E-04**	---	4.44E-03	-		---
TETRACHLOROETHENE	127-18-4	1.20E+01	Y	2.96E-01	---	4.00E+01	**7E-03**	---	2.54E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	Y	6.17E-03	---	2.00E+00	**3E-03**	---	5.29E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	3.52E-01	N	8.68E-03	---	2.00E+02	**4E-05**	---	7.44E-04	-		---
VINYL CHLORIDE	75-01-4	1.60E-02	Y	3.95E-04	---	8.00E+01	**5E-06**	---	3.38E-05	4.40E-06	M	**8E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0026H**	**Total Inhalation**	**2E-01**	**0E+00**	**1E-06**
		Based on NDs only	**5E-02**	**0E+00**	**1E-06**
		Based on Detects only	**1E-01**	**All ND**	**4E-07**
		Site-related only	**1E-02**	**0E+00**	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0026H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.22E+00	1.57E-02	9.40E-03	NA	NA	1.0E-08		2E-10	9E-11	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.76E-03	1.06E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.29E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	1.60E-02	1.13E-04	6.77E-05	NA	NA	4.4E-06		5E-10	3E-10	---	---	**8E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0027H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	1.27E-02	---	NA	---	---	1.09E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	1.66E-01	N	4.09E-03	---	2.00E+00	**2E-03**	---	3.51E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	2.22E-03	---	3.00E+01	**7E-05**	---	1.90E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	3.84E-02	---	2.00E+00	**2E-02**	---	3.29E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	1.85E-02	---	6.00E+01	**3E-04**	---	1.59E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	3.11E+00	Y	7.68E-02	---	7.00E+00	**1E-02**	---	6.59E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	1.85E-02	---	6.00E+01	**3E-04**	---	1.59E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	3.42E+00	Y	8.45E-02	---	8.00E+02	**1E-04**	---	7.24E-03	1.10E-05		**8E-08**
BENZENE	71-43-2	7.34E-01	Y	1.81E-02	---	3.00E+01	**6E-04**	---	1.55E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	2.36E-02	---	1.00E+00	**2E-02**	---	2.02E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	1.24E-02	---	NA	---	---	1.06E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	2.91E-01	N	7.18E-03	---	5.00E+00	**1E-03**	---	6.15E-04	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	1.16E-02	---	1.00E+02	**1E-04**	---	9.97E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	3.66E-01	N	9.03E-03	---	9.77E+01	**9E-05**	---	7.74E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	1.10E+00	Y	2.71E-02	---	7.00E+01	**4E-04**	---	2.33E-03	-		**---**
ETHYLBENZENE	100-41-4	3.25E-01	N	8.03E-03	---	1.00E+03	**8E-06**	---	6.88E-04	2.50E-06		**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	3.95E-02	---	NA	---	---	3.38E-03	2.20E-05		**7E-08**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
M,P-XYLENE	108-38-3	1.35E+00	Y	3.33E-02	---	1.00E+02	**3E-04**	---	2.85E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	1.25E+00	Y	3.08E-02	---	6.00E+02	**5E-05**	---	2.64E-03	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	3.25E-01	N	8.03E-03	---	1.00E+02	**8E-05**	---	6.88E-04	-		**---**
TETRACHLOROETHENE	127-18-4	3.50E-01	N	8.63E-03	---	4.00E+01	**2E-04**	---	7.40E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	6.17E-03	---	2.00E+00	**3E-03**	---	5.29E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	3.52E-01	N	8.68E-03	---	2.00E+02	**4E-05**	---	7.44E-04	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	1.60E-03	---	8.00E+01	**2E-05**	---	1.37E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0027H**	**Total Inhalation**	**1E-01**	**0E+00**	**1E-06**
		Based on NDs only	**1E-01**	**0E+00**	**1E-06**
		Based on Detects only	**1E-02**	**All ND**	**3E-07**
		Site-related only	**3E-03**	**0E+00**	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0027H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.25E+00	8.81E-03	5.28E-03	NA	NA	1.0E-08		9E-11	5E-11	---	---	**1E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.76E-03	1.06E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.29E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	4.58E-04	2.75E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0029H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	1.27E-02	---	NA	---	---	1.09E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	1.66E-01	N	4.09E-03	---	2.00E+00	**2E-03**	---	3.51E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	2.80E-01	Y	6.91E-03	---	3.00E+01	**2E-04**	---	5.92E-04	5.00E-06		**3E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	3.84E-02	---	2.00E+00	**2E-02**	---	3.29E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E-01	Y	3.95E-03	---	6.00E+01	**7E-05**	---	3.38E-04	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	7.90E-02	Y	1.95E-03	---	7.00E+00	**3E-04**	---	1.67E-04	2.60E-05		**4E-09**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	1.85E-02	---	6.00E+01	**3E-04**	---	1.59E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	2.22E-02	---	8.00E+02	**3E-05**	---	1.91E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	1.31E+00	Y	3.23E-02	---	3.00E+01	**1E-03**	---	2.77E-03	7.80E-06		**2E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	2.36E-02	---	1.00E+00	**2E-02**	---	2.02E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	1.24E-02	---	NA	---	---	1.06E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	7.00E-01	N	1.73E-02	---	5.00E+00	**3E-03**	---	1.48E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	9.87E-03	---	1.00E+02	**1E-04**	---	8.46E-04	6.00E-06		**5E-09**
CHLOROFORM	67-66-3	1.00E+00	Y	2.47E-02	---	9.77E+01	**3E-04**	---	2.11E-03	2.30E-05		**5E-08**
ETHYL ACETATE	141-78-6	5.50E-01	N	1.36E-02	---	7.00E+01	**2E-04**	---	1.16E-03	-		---
ETHYLBENZENE	100-41-4	1.80E-01	Y	4.44E-03	---	1.00E+03	**4E-06**	---	3.81E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	3.95E-02	---	NA	---	---	3.38E-03	2.20E-05		**7E-08**
ISOPROPYL ALCOHOL	67-63-0	1.70E+01	Y	4.19E-01	---	2.00E+02	**2E-03**	---	3.59E-02	-		---
M,P-XYLENE	108-38-3	2.21E+00	Y	5.45E-02	---	1.00E+02	**5E-04**	---	4.67E-03	-		---
METHYLENE CHLORIDE	75-09-2	1.91E+01	Y	4.71E-01	---	6.00E+02	**8E-04**	---	4.04E-02	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.80E-01	Y	4.44E-03	---	1.00E+02	**4E-05**	---	3.81E-04	-		---
TETRACHLOROETHENE	127-18-4	6.58E+00	Y	1.62E-01	---	4.00E+01	**4E-03**	---	1.39E-02	2.60E-07		**4E-09**
TRICHLOROETHENE	79-01-6	3.70E-02	Y	9.13E-04	---	2.00E+00	**5E-04**	---	7.82E-05	4.10E-06	M	**7E-10**
VINYL ACETATE	108-05-4	3.52E-01	N	8.68E-03	---	2.00E+02	**4E-05**	---	7.44E-04	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	1.60E-03	---	8.00E+01	**2E-05**	---	1.37E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0029H**	**Total Inhalation**	**1E-01**	**0E+00**	**1E-06**
		Based on NDs only	**1E-01**	**0E+00**	**1E-06**
		Based on Detects only	**1E-02**	**All ND**	**9E-08**
		Site-related only	**5E-03**	**0E+00**	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0029H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.91E+01	1.35E-01	8.07E-02	NA	NA	1.0E-08		1E-09	8E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	3.70E-02	2.61E-04	1.56E-04	NA	NA	1.0E-06	kidney	3E-10	2E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	3.70E-02	7.82E-05		NA		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	6.50E-02	4.58E-04	2.75E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0030H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	1.27E-02	---	NA	---	---	1.09E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	1.66E-01	N	4.09E-03	---	2.00E+00	**2E-03**	---	3.51E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	2.74E-02	---	2.00E+00	**1E-02**	---	2.35E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.21E+00	Y	5.45E-02	---	6.00E+01	**9E-04**	---	4.67E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	9.30E-01	Y	2.29E-02	---	7.00E+00	**3E-03**	---	1.97E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	9.00E-01	Y	2.22E-02	---	6.00E+01	**4E-04**	---	1.90E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	1.11E-02	---	8.00E+02	**1E-05**	---	9.53E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	1.12E+00	Y	2.76E-02	---	3.00E+01	**9E-04**	---	2.36E-03	7.80E-06		**2E-08**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	1.97E-02	---	1.00E+00	**2E-02**	---	1.69E-03	4.90E-05		**8E-08**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	1.24E-02	---	NA	---	---	1.06E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	2.91E-01	N	7.18E-03	---	5.00E+00	**1E-03**	---	6.15E-04	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	1.16E-02	---	1.00E+02	**1E-04**	---	9.97E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	3.66E-01	N	9.03E-03	---	9.77E+01	**9E-05**	---	7.74E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	3.70E+00	Y	9.13E-02	---	7.00E+01	**1E-03**	---	7.82E-03	-		---
ETHYLBENZENE	100-41-4	1.13E+00	Y	2.78E-02	---	1.00E+03	**3E-05**	---	2.39E-03	2.50E-06		**6E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	3.95E-02	---	NA	---	---	3.38E-03	2.20E-05		**7E-08**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	4.80E+00	Y	1.18E-01	---	1.00E+02	**1E-03**	---	1.01E-02	-		---
METHYLENE CHLORIDE	75-09-2	1.11E+00	Y	2.74E-02	---	6.00E+02	**5E-05**	---	2.35E-03	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.60E+00	Y	3.95E-02	---	1.00E+02	**4E-04**	---	3.38E-03	-		---
TETRACHLOROETHENE	127-18-4	5.90E+00	Y	1.46E-01	---	4.00E+01	**4E-03**	---	1.25E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	4.05E-01	N	9.99E-03	---	2.00E+00	**5E-03**	---	8.56E-04	4.10E-06	M	**7E-09**
VINYL ACETATE	108-05-4	2.65E-01	N	6.54E-03	---	2.00E+02	**3E-05**	---	5.60E-04	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	4.73E-03	---	8.00E+01	**6E-05**	---	4.05E-04	4.40E-06	M	**1E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0030H**	**Total Inhalation**	**1E-01**	**0E+00**	**1E-06**
		Based on NDs only	**1E-01**	**0E+00**	**1E-06**
		Based on Detects only	**1E-02**	**All ND**	**8E-08**
		Site-related only	**9E-03**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0030H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.11E+00	7.83E-03	4.70E-03	NA	NA	1.0E-08		8E-11	5E-11	---	---	**1E-10**
TRICHLOROETHENE	79-01-6	4.05E-01	2.85E-03	1.71E-03	NA	NA	1.0E-06	kidney	3E-09	2E-09	---	---	**5E-09**
TRICHLOROETHENE	79-01-6	4.05E-01	8.56E-04		NA		3.1E-06	NHL+liver	3E-09		---		**3E-09**
VINYL CHLORIDE	75-01-4	1.92E-01	1.35E-03	8.10E-04	NA	NA	4.4E-06		6E-09	4E-09	---	---	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0036H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult		CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A	TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	1.27E-02	---	NA	---	---	1.09E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	1.66E-01	N	4.09E-03	---	2.00E+00	**2E-03**	---	3.51E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	2.74E-02	---	2.00E+00	**1E-02**	---	2.35E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.70E-01	N	9.13E-03	---	6.00E+01	**2E-04**	---	7.82E-04	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	7.52E-03	---	7.00E+00	**1E-03**	---	6.45E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	9.13E-03	---	6.00E+01	**2E-04**	---	7.82E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	1.11E-02	---	8.00E+02	**1E-05**	---	9.53E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	1.15E+00	Y	2.84E-02	---	3.00E+01	**9E-04**	---	2.43E-03	7.80E-06		**2E-08**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	1.97E-02	---	1.00E+00	**2E-02**	---	1.69E-03	4.90E-05		**8E-08**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	1.24E-02	---	NA	---	---	1.06E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	2.91E-01	N	7.18E-03	---	5.00E+00	**1E-03**	---	6.15E-04	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	1.16E-02	---	1.00E+02	**1E-04**	---	9.97E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	1.10E+00	Y	2.71E-02	---	9.77E+01	**3E-04**	---	2.33E-03	2.30E-05		**5E-08**
ETHYL ACETATE	141-78-6	6.12E+00	Y	1.51E-01	---	7.00E+01	**2E-03**	---	1.29E-02	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	8.03E-03	---	1.00E+03	**8E-06**	---	6.88E-04	2.50E-06		**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	3.95E-02	---	NA	---	---	3.38E-03	2.20E-05		**7E-08**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	8.30E-01	Y	2.05E-02	---	1.00E+02	**2E-04**	---	1.75E-03	-		---
METHYLENE CHLORIDE	75-09-2	1.10E+00	Y	2.71E-02	---	6.00E+02	**5E-05**	---	2.33E-03	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	8.03E-03	---	1.00E+02	**8E-05**	---	6.88E-04	-		---
TETRACHLOROETHENE	127-18-4	3.60E+00	Y	8.88E-02	---	4.00E+01	**2E-03**	---	7.61E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	4.05E-01	N	9.99E-03	---	2.00E+00	**5E-03**	---	8.56E-04	4.10E-06	M	**7E-09**
VINYL ACETATE	108-05-4	2.65E-01	N	6.54E-03	---	2.00E+02	**3E-05**	---	5.60E-04	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	4.73E-03	---	8.00E+01	**6E-05**	---	4.05E-04	4.40E-06	M	**1E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0036H**	**Total Inhalation**	**1E-01**	**0E+00**	**1E-06**
		Based on NDs only	**1E-01**	**0E+00**	**1E-06**
		Based on Detects only	**6E-03**	**All ND**	**7E-08**
		Site-related only	**7E-03**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0036H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.10E+00	7.75E-03	4.65E-03	NA	NA	1.0E-08		8E-11	5E-11	---	---	**1E-10**
TRICHLOROETHENE	79-01-6	4.05E-01	2.85E-03	1.71E-03	NA	NA	1.0E-06	kidney	3E-09	2E-09	---	---	**5E-09**
TRICHLOROETHENE	79-01-6	4.05E-01	8.56E-04		NA		3.1E-06	NHL+liver	3E-09		---		**3E-09**
VINYL CHLORIDE	75-01-4	1.92E-01	1.35E-03	8.10E-04	NA	NA	4.4E-06		6E-09	4E-09	---	---	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0037H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-01	Y	2.71E-03	---	NA	---	---	2.33E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	3.00E-01	Y	7.40E-03	---	2.00E+00	**4E-03**	---	6.34E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	1.70E+00	Y	4.19E-02	---	3.00E+01	**1E-03**	---	3.59E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.60E+00	N	3.95E-02	---	2.00E+00	**2E-02**	---	3.38E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.40E+00	Y	1.33E-01	---	6.00E+01	**2E-03**	---	1.14E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	7.00E+00	Y	1.73E-01	---	7.00E+00	**2E-02**	---	1.48E-02	2.60E-05		**4E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	1.20E+00	Y	2.96E-02	---	6.00E+01	**5E-04**	---	2.54E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	1.11E-02	---	8.00E+02	**1E-05**	---	9.53E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	3.70E+00	Y	9.13E-02	---	3.00E+01	**3E-03**	---	7.82E-03	7.80E-06		**6E-08**
BENZYL CHLORIDE	100-44-7	1.20E-01	N	2.96E-03	---	1.00E+00	**3E-03**	---	2.54E-04	4.90E-05		**1E-08**
BROMODICHLOROMETHANE	75-27-4	5.70E-01	Y	1.41E-02	---	NA	---	---	1.21E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	4.00E-01	N	9.87E-03	---	5.00E+00	**2E-03**	---	8.46E-04	-		---
CARBON TETRACHLORIDE	56-23-5	5.50E-01	Y	1.36E-02	---	1.00E+02	**1E-04**	---	1.16E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	3.20E+00	Y	7.89E-02	---	9.77E+01	**8E-04**	---	6.77E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	2.40E+00	Y	5.92E-02	---	7.00E+01	**8E-04**	---	5.07E-03	-		---
ETHYLBENZENE	100-41-4	3.80E+00	Y	9.37E-02	---	1.00E+03	**9E-05**	---	8.03E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	2.15E+00	N	5.30E-02	---	NA	---	---	4.55E-03	2.20E-05		**1E-07**
ISOPROPYL ALCOHOL	67-63-0	7.50E+01	Y	1.85E+00	---	2.00E+02	**9E-03**	---	1.59E-01	-		---
M,P-XYLENE	108-38-3	1.60E+01	Y	3.95E-01	---	1.00E+02	**4E-03**	---	3.38E-02	-		---
METHYLENE CHLORIDE	75-09-2	8.20E-01	Y	2.02E-02	---	6.00E+02	**3E-05**	---	1.73E-03	1.00E-08	M	**9E-11**
NAPHTHALENE	91-20-3	7.20E-02	Y	1.78E-03	---	3.00E+00	**6E-04**	---	1.52E-04	3.40E-05		**5E-09**
O-XYLENE	95-47-6	5.60E+00	Y	1.38E-01	---	1.00E+02	**1E-03**	---	1.18E-02	-		---
TETRACHLOROETHENE	127-18-4	8.70E+00	Y	2.15E-01	---	4.00E+01	**5E-03**	---	1.84E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	Y	2.47E-03	---	2.00E+00	**1E-03**	---	2.11E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	2.65E-01	N	6.54E-03	---	2.00E+02	**3E-05**	---	5.60E-04	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	1.60E-03	---	8.00E+01	**2E-05**	---	1.37E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0037H**	**Total Inhalation**	**1E-01**	**0E+00**	**2E-06**
		Based on NDs only	**8E-02**	**0E+00**	**9E-07**
		Based on Detects only	**6E-02**	**All ND**	**7E-07**
		Site-related only	**8E-03**	**0E+00**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0037H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.20E-01	5.78E-03	3.47E-03	NA	NA	1.0E-08		6E-11	3E-11	---	---	**9E-11**
TRICHLOROETHENE	79-01-6	1.00E-01	7.05E-04	4.23E-04	NA	NA	1.0E-06	kidney	7E-10	4E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	2.11E-04		NA		3.1E-06	NHL+liver	7E-10		---		**7E-10**
VINYL CHLORIDE	75-01-4	6.50E-02	4.58E-04	2.75E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0038H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	1.27E-02	---	NA	---	---	1.09E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	1.66E-01	N	4.09E-03	---	2.00E+00	**2E-03**	---	3.51E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	2.22E-03	---	3.00E+01	**7E-05**	---	1.90E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	3.84E-02	---	2.00E+00	**2E-02**	---	3.29E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	1.85E-02	---	6.00E+01	**3E-04**	---	1.59E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	7.52E-03	---	7.00E+00	**1E-03**	---	6.45E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	1.85E-02	---	6.00E+01	**3E-04**	---	1.59E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	2.22E-02	---	8.00E+02	**3E-05**	---	1.91E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	5.11E-01	Y	1.26E-02	---	3.00E+01	**4E-04**	---	1.08E-03	7.80E-06		**8E-09**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	2.36E-02	---	1.00E+00	**2E-02**	---	2.02E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	1.24E-02	---	NA	---	---	1.06E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	2.91E-01	N	7.18E-03	---	5.00E+00	**1E-03**	---	6.15E-04	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	1.16E-02	---	1.00E+02	**1E-04**	---	9.97E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	1.42E+00	Y	3.49E-02	---	9.77E+01	**4E-04**	---	2.99E-03	2.30E-05		**7E-08**
ETHYL ACETATE	141-78-6	5.50E-01	N	1.36E-02	---	7.00E+01	**2E-04**	---	1.16E-03	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	8.03E-03	---	1.00E+03	**8E-06**	---	6.88E-04	2.50E-06		**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	3.95E-02	---	NA	---	---	3.38E-03	2.20E-05		**7E-08**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.30E+00	Y	3.21E-02	---	1.00E+02	**3E-04**	---	2.75E-03	-		---
METHYLENE CHLORIDE	75-09-2	3.12E+00	Y	7.71E-02	---	6.00E+02	**1E-04**	---	6.61E-03	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	8.03E-03	---	1.00E+02	**8E-05**	---	6.88E-04	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	8.63E-03	---	4.00E+01	**2E-04**	---	7.40E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	6.17E-03	---	2.00E+00	**3E-03**	---	5.29E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	3.52E-01	N	8.68E-03	---	2.00E+02	**4E-05**	---	7.44E-04	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	1.60E-03	---	8.00E+01	**2E-05**	---	1.37E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0038H**	**Total Inhalation**	**1E-01**	**0E+00**	**1E-06**
		Based on NDs only	**1E-01**	**0E+00**	**1E-06**
		Based on Detects only	**1E-03**	**All ND**	**8E-08**
		Site-related only	**3E-03**	**0E+00**	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0038H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.12E+00	2.20E-02	1.32E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.76E-03	1.06E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.29E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	4.58E-04	2.75E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0040H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	1.27E-02	---	NA	---	---	1.09E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	1.44E+00	Y	3.54E-02	---	2.00E+00	**2E-02**	---	3.04E-03	3.00E-05		**9E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	2.22E-03	---	3.00E+01	**7E-05**	---	1.90E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.10E+00	Y	1.01E-01	---	6.00E+01	**2E-03**	---	8.67E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	7.52E-03	---	7.00E+00	**1E-03**	---	6.45E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	1.10E+00	Y	2.71E-02	---	6.00E+01	**5E-04**	---	2.33E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	1.11E-02	---	8.00E+02	**1E-05**	---	9.53E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	2.60E+00	Y	6.41E-02	---	3.00E+01	**2E-03**	---	5.50E-03	7.80E-06		**4E-08**
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	1.24E-02	---	NA	**---**	**---**	1.06E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	2.91E-01	N	7.18E-03	---	5.00E+00	**1E-03**	---	6.15E-04	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	1.16E-02	---	1.00E+02	**1E-04**	---	9.97E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	4.80E+00	Y	1.18E-01	---	9.77E+01	**1E-03**	---	1.01E-02	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	1.30E+00	Y	3.21E-02	---	7.00E+01	**5E-04**	---	2.75E-03	-		**---**
ETHYLBENZENE	100-41-4	2.20E+00	Y	5.43E-02	---	1.00E+03	**5E-05**	---	4.65E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	7.90E+00	Y	1.95E-01	---	1.00E+02	**2E-03**	---	1.67E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	2.60E+02	Y	6.41E+00	---	6.00E+02	**1E-02**	---	5.50E-01	1.00E-08	M	**3E-08**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.34E+00	Y	5.78E-02	---	1.00E+02	**6E-04**	---	4.95E-03	-		**---**
TETRACHLOROETHENE	127-18-4	1.53E+02	Y	3.78E+00	---	4.00E+01	**9E-02**	---	3.24E-01	2.60E-07		**8E-08**
TRICHLOROETHENE	79-01-6	1.26E+01	Y	3.11E-01	---	2.00E+00	**2E-01**	---	2.66E-02	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	6.54E-03	---	2.00E+02	**3E-05**	---	5.60E-04	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	1.60E-03	---	8.00E+01	**2E-05**	---	1.37E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0040H**	**Total Inhalation**	**3E-01**	**0E+00**	**2E-06**
		Based on NDs only	**6E-02**	**0E+00**	**9E-07**
		Based on Detects only	**3E-01**	**All ND**	**7E-07**
		Site-related only	**2E-01**	**0E+00**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0040H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.60E+02	1.83E+00	1.10E+00	NA	NA	1.0E-08		2E-08	1E-08	---	---	**3E-08**
TRICHLOROETHENE	79-01-6	1.26E+01	8.88E-02	5.33E-02	NA	NA	1.0E-06	kidney	9E-08	5E-08	---	---	**1E-07**
TRICHLOROETHENE	79-01-6	1.26E+01	2.66E-02		NA		3.1E-06	NHL+liver	8E-08		---		**8E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	4.58E-04	2.75E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0041H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	2.59E-04	---	NA	---	---	2.22E-05	5.80E-05		**1E-09**
1,3-BUTADIENE	106-99-0	4.90E-02	N	1.21E-03	---	2.00E+00	**6E-04**	---	1.04E-04	3.00E-05		**3E-09**
1,4-DIOXANE	123-91-1	7.00E-02	N	1.73E-03	---	3.00E+01	**6E-05**	---	1.48E-04	5.00E-06		**7E-10**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	1.73E-04	---	2.00E-01	**9E-04**	---	1.48E-05	1.60E-05		**2E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	4.80E-01	N	1.18E-02	---	2.00E+00	**6E-03**	---	1.01E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E-01	Y	3.45E-03	---	6.00E+01	**6E-05**	---	2.96E-04	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	8.14E-04	---	9.00E+00	**9E-05**	---	6.98E-05	6.00E-04		**4E-08**
1,2-DICHLOROETHANE	107-06-2	5.10E-01	Y	1.26E-02	---	7.00E+00	**2E-03**	---	1.08E-03	2.60E-05		**3E-08**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	2.22E-03	---	4.00E+00	**6E-04**	---	1.90E-04	3.70E-06		**7E-10**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	1.48E-03	---	6.00E+01	**2E-05**	---	1.27E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	1.23E-03	---	8.00E+02	**2E-06**	---	1.06E-04	1.10E-05		**1E-09**
BENZENE	71-43-2	4.80E-01	Y	1.18E-02	---	3.00E+01	**4E-04**	---	1.01E-03	7.80E-06		**8E-09**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	2.10E-03	---	1.00E+00	**2E-03**	---	1.80E-04	4.90E-05		**9E-09**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	3.08E-03	---	NA	---	---	2.64E-04	3.70E-05		**1E-08**
BROMOMETHANE	74-83-9	6.50E-01	N	1.60E-02	---	5.00E+00	**3E-03**	---	1.37E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	1.06E-02	---	1.00E+02	**1E-04**	---	9.09E-04	6.00E-06		**5E-09**
CHLOROFORM	67-66-3	9.00E-01	Y	2.22E-02	---	9.77E+01	**2E-04**	---	1.90E-03	2.30E-05		**4E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.40E-01	Y	3.45E-03	---	1.00E+03	**3E-06**	---	2.96E-04	2.50E-06		**7E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	1.60E-02	---	NA	---	---	1.37E-03	2.20E-05		**3E-08**
ISOPROPYL ALCOHOL	67-63-0	2.70E+01	Y	6.66E-01	---	2.00E+02	**3E-03**	---	5.71E-02	-		**---**
M,P-XYLENE	108-38-3	4.00E-01	Y	9.87E-03	---	1.00E+02	**1E-04**	---	8.46E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	3.20E-01	N	7.89E-03	---	6.00E+02	**1E-05**	---	6.77E-04	1.00E-08	M	**4E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.40E-01	Y	3.45E-03	---	1.00E+02	**3E-05**	---	2.96E-04	-		**---**
TETRACHLOROETHENE	127-18-4	4.60E+00	Y	1.13E-01	---	4.00E+01	**3E-03**	---	9.73E-03	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	6.17E-03	---	2.00E+00	**3E-03**	---	5.29E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	8.00E-03	N	1.97E-04	---	8.00E+01	**2E-06**	---	1.69E-05	4.40E-06	M	**4E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0041H**	**Total Inhalation**	**3E-02**	**0E+00**	**2E-07**
		Based on NDs only	**2E-02**	**0E+00**	**1E-07**
		Based on Detects only	**9E-03**	**All ND**	**9E-08**
		Site-related only	**6E-03**	**0E+00**	**8E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0041H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.20E-01	2.26E-03	1.35E-03	NA	NA	1.0E-08		2E-11	1E-11	---	---	**4E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	1.76E-03	1.06E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.29E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	8.00E-03	5.64E-05	3.38E-05	NA	NA	4.4E-06		2E-10	1E-10	---	---	**4E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0045S**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	2.50E-01	N	6.17E-03	---	7.00E+00	**9E-04**	---	5.29E-04	2.60E-05		**1E-08**
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	4.00E+01	Y	9.87E-01	---	4.00E+01	**2E-02**	---	8.46E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	1.30E+00	Y	3.21E-02	---	2.00E+00	**2E-02**	---	2.75E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	5.30E-01	Y	1.31E-02	---	8.00E+01	**2E-04**	---	1.12E-03	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0045S**	**Total Inhalation**	**4E-02**	**0E+00**	**9E-08**
		Based on NDs only	**9E-04**	**0E+00**	**1E-08**
		Based on Detects only	**4E-02**	**All ND**	**7E-08**
		Site-related only	**4E-02**	**0E+00**	**7E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0045S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.30E+00	9.16E-03	5.50E-03	NA	NA	1.0E-06	kidney	9E-09	5E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	1.30E+00	2.75E-03		NA		3.1E-06	NHL+liver	9E-09		---		**9E-09**
VINYL CHLORIDE	75-01-4	5.30E-01	3.74E-03	2.24E-03	NA	NA	4.4E-06		2E-08	1E-08	---	---	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0047H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime	
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03	

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	9.00E+00	Y	2.22E-01	---	4.00E+01	**6E-03**	---	1.90E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	6.17E-03	---	2.00E+00	**3E-03**	---	5.29E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0047H**	**Total Inhalation**	**9E-03**	**0E+00**	**9E-09**
		Based on NDs only	**3E-03**	**0E+00**	**4E-09**
		Based on Detects only	**6E-03**	**All ND**	**5E-09**
		Site-related only	**9E-03**	**0E+00**	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0047H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.76E-03	1.06E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.29E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0050H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	8.63E-03	---	4.00E+01	**2E-04**	---	7.40E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	6.17E-03	---	2.00E+00	**3E-03**	---	5.29E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0050H**	**Total Inhalation**	**3E-03**	**0E+00**	**5E-09**
		Based on NDs only	**3E-03**	**0E+00**	**5E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-03**	**0E+00**	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0050H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.76E-03	1.06E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.29E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0051H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	1.27E-02	---	NA	---	---	1.09E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	1.66E-01	N	4.09E-03	---	2.00E+00	**2E-03**	---	3.51E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	2.20E-01	Y	5.43E-03	---	3.00E+01	**2E-04**	---	4.65E-04	5.00E-06		**2E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.20E+00	N	2.96E-02	---	2.00E+00	**1E-02**	---	2.54E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.80E-01	Y	1.92E-02	---	6.00E+01	**3E-04**	---	1.65E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	3.45E-03	---	7.00E+00	**5E-04**	---	2.96E-04	2.60E-05		**8E-09**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	9.13E-03	---	6.00E+01	**2E-04**	---	7.82E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	2.10E-01	Y	5.18E-03	---	8.00E+02	**6E-06**	---	4.44E-04	1.10E-05		**5E-09**
BENZENE	71-43-2	6.30E-01	Y	1.55E-02	---	3.00E+01	**5E-04**	---	1.33E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	2.35E-01	N	5.80E-03	---	1.00E+00	**6E-03**	---	4.97E-04	4.90E-05		**2E-08**
BROMODICHLOROMETHANE	75-27-4	3.60E-01	Y	8.88E-03	---	NA	---	---	7.61E-04	3.70E-05		**3E-08**
BROMOMETHANE	74-83-9	8.00E-01	N	1.97E-02	---	5.00E+00	**4E-03**	---	1.69E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	1.18E-02	---	1.00E+02	**1E-04**	---	1.01E-03	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	2.10E+00	Y	5.18E-02	---	9.77E+01	**5E-04**	---	4.44E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	7.60E+00	Y	1.87E-01	---	7.00E+01	**3E-03**	---	1.61E-02	-		---
ETHYLBENZENE	100-41-4	9.50E-01	Y	2.34E-02	---	1.00E+03	**2E-05**	---	2.01E-03	2.50E-06		**5E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	9.50E-01	N	2.34E-02	---	NA	---	---	2.01E-03	2.20E-05		**4E-08**
ISOPROPYL ALCOHOL	67-63-0	5.20E+02	Y	1.28E+01	---	2.00E+02	**6E-02**	---	1.10E+00	-		---
M,P-XYLENE	108-38-3	3.00E+00	Y	7.40E-02	---	1.00E+02	**7E-04**	---	6.34E-03	-		---
METHYLENE CHLORIDE	75-09-2	9.40E-01	Y	2.32E-02	---	6.00E+02	**4E-05**	---	1.99E-03	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	8.30E-02	Y	2.05E-03	---	3.00E+00	**7E-04**	---	1.75E-04	3.40E-05		**6E-09**
O-XYLENE	95-47-6	9.10E-01	Y	2.24E-02	---	1.00E+02	**2E-04**	---	1.92E-03	-		---
TETRACHLOROETHENE	127-18-4	4.02E+02	Y	9.92E+00	---	4.00E+01	**2E-01**	---	8.50E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	6.00E-02	Y	1.48E-03	---	2.00E+00	**7E-04**	---	1.27E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	1.83E+00	Y	4.51E-02	---	2.00E+02	**2E-04**	---	3.87E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	1.60E-03	---	8.00E+01	**2E-05**	---	1.37E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0051H**	**Total Inhalation**	**4E-01**	**0E+00**	**1E-06**
		Based on NDs only	**8E-02**	**0E+00**	**9E-07**
		Based on Detects only	**3E-01**	**All ND**	**4E-07**
		Site-related only	**2E-01**	**0E+00**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0051H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.40E-01	6.62E-03	3.97E-03	NA	NA	1.0E-08		7E-11	4E-11	---	---	**1E-10**
TRICHLOROETHENE	79-01-6	6.00E-02	4.23E-04	2.54E-04	NA	NA	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	6.00E-02	1.27E-04		NA		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	6.50E-02	4.58E-04	2.75E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0052H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	2.47E-02	#N/A	TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.90E+00	Y	4.69E-02	---	4.00E+01	**1E-03**	---	4.02E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	6.17E-03	---	2.00E+00	**3E-03**	---	5.29E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0052H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**3E-03**	**0E+00**	**4E-09**
		Based on Detects only	**1E-03**	**All ND**	**1E-09**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0052H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.76E-03	1.06E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.29E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0053H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	1.27E-02	---	NA	---	---	1.09E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	1.90E-01	Y	4.69E-03	---	2.00E+00	**2E-03**	---	4.02E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	2.10E-01	N	5.18E-03	---	3.00E+01	**2E-04**	---	4.44E-04	5.00E-06		**2E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.45E+00	N	3.58E-02	---	2.00E+00	**2E-02**	---	3.07E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	6.10E-01	Y	1.50E-02	---	6.00E+01	**3E-04**	---	1.29E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	7.60E-02	Y	1.87E-03	---	7.00E+00	**3E-04**	---	1.61E-04	2.60E-05		**4E-09**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	9.13E-03	---	6.00E+01	**2E-04**	---	7.82E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	1.11E-02	---	8.00E+02	**1E-05**	---	9.53E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	9.60E-01	Y	2.37E-02	---	3.00E+01	**8E-04**	---	2.03E-03	7.80E-06		**2E-08**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	2.71E-03	---	1.00E+00	**3E-03**	---	2.33E-04	4.90E-05		**1E-08**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	1.24E-02	---	NA	---	---	1.06E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	3.70E-01	N	9.13E-03	---	5.00E+00	**2E-03**	---	7.82E-04	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	1.13E-02	---	1.00E+02	**1E-04**	---	9.73E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	8.78E-01	Y	2.17E-02	---	9.77E+01	**2E-04**	---	1.86E-03	2.30E-05		**4E-08**
ETHYL ACETATE	141-78-6	3.13E+00	Y	7.73E-02	---	7.00E+01	**1E-03**	---	6.62E-03	-		---
ETHYLBENZENE	100-41-4	3.30E+00	Y	8.14E-02	---	1.00E+03	**8E-05**	---	6.98E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.95E+00	N	4.81E-02	---	NA	---	---	4.12E-03	2.20E-05		**9E-08**
ISOPROPYL ALCOHOL	67-63-0	5.40E+00	Y	1.33E-01	---	2.00E+02	**7E-04**	---	1.14E-02	-		---
M,P-XYLENE	108-38-3	2.30E+00	Y	5.67E-02	---	1.00E+02	**6E-04**	---	4.86E-03	-		---
METHYLENE CHLORIDE	75-09-2	8.33E-01	Y	2.06E-02	---	6.00E+02	**3E-05**	---	1.76E-03	1.00E-08	M	**9E-11**
NAPHTHALENE	91-20-3	3.60E-02	Y	8.88E-04	---	3.00E+00	**3E-04**	---	7.61E-05	3.40E-05		**3E-09**
O-XYLENE	95-47-6	8.25E-01	Y	2.03E-02	---	1.00E+02	**2E-04**	---	1.74E-03	-		---
TETRACHLOROETHENE	127-18-4	2.41E+01	Y	5.94E-01	---	4.00E+01	**1E-02**	---	5.10E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	4.70E-01	Y	1.16E-02	---	2.00E+00	**6E-03**	---	9.94E-04	4.10E-06	M	**8E-09**
VINYL ACETATE	108-05-4	2.65E-01	N	6.54E-03	---	2.00E+02	**3E-05**	---	5.60E-04	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	1.60E-03	---	8.00E+01	**2E-05**	---	1.37E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0053H**	**Total Inhalation**	**1E-01**	**0E+00**	**1E-06**
		Based on NDs only	**8E-02**	**0E+00**	**1E-06**
		Based on Detects only	**3E-02**	**All ND**	**1E-07**
		Site-related only	**2E-02**	**0E+00**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0053H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.33E-01	5.87E-03	3.52E-03	NA	NA	1.0E-08		6E-11	4E-11	---	---	**9E-11**
TRICHLOROETHENE	79-01-6	4.70E-01	3.31E-03	1.99E-03	NA	NA	1.0E-06	kidney	3E-09	2E-09	---	---	**5E-09**
TRICHLOROETHENE	79-01-6	4.70E-01	9.94E-04		NA		3.1E-06	NHL+liver	3E-09		---		**3E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	4.58E-04	2.75E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0054H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	2.14E+01	Y	5.28E-01	---	4.00E+01	**1E-02**	---	4.52E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	9.30E+00	Y	2.29E-01	---	2.00E+00	**1E-01**	---	1.97E-02	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0054H**	**Total Inhalation**	**1E-01**	**0E+00**	**2E-07**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**1E-01**	**All ND**	**2E-07**
		Site-related only	**1E-01**	**0E+00**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0054H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.30E+00	6.55E-02	3.93E-02	NA	NA	1.0E-06	kidney	7E-08	4E-08	---	---	**1E-07**
TRICHLOROETHENE	79-01-6	9.30E+00	1.97E-02		NA		3.1E-06	NHL+liver	6E-08		---		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0055H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.50E+00	Y	3.70E-02	---	4.00E+01	**9E-04**	---	3.17E-03	2.60E-07		**8E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	6.17E-03	---	2.00E+00	**3E-03**	---	5.29E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0055H**	**Total Inhalation**	**4E-03**	**0E+00**	**5E-09**
		Based on NDs only	**3E-03**	**0E+00**	**4E-09**
		Based on Detects only	**9E-04**	**All ND**	**8E-10**
		Site-related only	**4E-03**	**0E+00**	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0055H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.76E-03	1.06E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.29E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0056H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime	
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03	

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	6.90E+00	Y	1.70E-01	---	4.00E+01	**4E-03**	---	1.46E-02	2.60E-07		**4E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	6.17E-03	---	2.00E+00	**3E-03**	---	5.29E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0056H**	**Total Inhalation**	**7E-03**	**0E+00**	**8E-09**
		Based on NDs only	**3E-03**	**0E+00**	**4E-09**
		Based on Detects only	**4E-03**	**All ND**	**4E-09**
		Site-related only	**7E-03**	**0E+00**	**8E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0056H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.76E-03	1.06E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.29E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0057H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	2.47E-02	#N/A	TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	8.63E-03	---	4.00E+01	**2E-04**	---	7.40E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	6.17E-03	---	2.00E+00	**3E-03**	---	5.29E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0057H**	**Total Inhalation**	**3E-03**	**0E+00**	**5E-09**
		Based on NDs only	**3E-03**	**0E+00**	**5E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-03**	**0E+00**	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0057H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.76E-03	1.06E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.29E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0058H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	8.63E-03	---	4.00E+01	**2E-04**	---	7.40E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	6.17E-03	---	2.00E+00	**3E-03**	---	5.29E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0058H**	**Total Inhalation**	**3E-03**	**0E+00**	**5E-09**
		Based on NDs only	**3E-03**	**0E+00**	**5E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-03**	**0E+00**	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0058H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.76E-03	1.06E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.29E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0059H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	7.00E-02	N	1.73E-03	---	NA	**---**	---	1.48E-04	5.80E-05		**9E-09**
1,3-BUTADIENE	106-99-0	3.60E-01	Y	8.88E-03	---	2.00E+00	**4E-03**	---	7.61E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	4.70E+00	Y	1.16E-01	---	3.00E+01	**4E-03**	---	9.94E-03	5.00E-06		**5E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.95E-02	N	1.22E-03	---	2.00E-01	**6E-03**	---	1.05E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.00E+00	Y	9.87E-02	---	2.00E+00	**5E-02**	---	8.46E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.10E-01	Y	1.50E-02	---	6.00E+01	**3E-04**	---	1.29E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.60E-02	N	8.88E-04	---	9.00E+00	**1E-04**	---	7.61E-05	6.00E-04		**5E-08**
1,2-DICHLOROETHANE	107-06-2	8.60E-02	Y	2.12E-03	---	7.00E+00	**3E-04**	---	1.82E-04	2.60E-05		**5E-09**
1,2-DICHLOROPROPANE	78-87-5	1.60E+00	Y	3.95E-02	---	4.00E+00	**1E-02**	---	3.38E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	1.45E-01	N	3.58E-03	---	6.00E+01	**6E-05**	---	3.07E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.80E-01	Y	4.44E-03	---	8.00E+02	**6E-06**	---	3.81E-04	1.10E-05		**4E-09**
BENZENE	71-43-2	1.90E+00	Y	4.69E-02	---	3.00E+01	**2E-03**	---	4.02E-03	7.80E-06		**3E-08**
BENZYL CHLORIDE	100-44-7	1.50E-01	N	3.70E-03	---	1.00E+00	**4E-03**	---	3.17E-04	4.90E-05		**2E-08**
BROMODICHLOROMETHANE	75-27-4	2.30E-01	Y	5.67E-03	---	NA	**---**	---	4.86E-04	3.70E-05		**2E-08**
BROMOMETHANE	74-83-9	5.00E-01	N	1.23E-02	---	5.00E+00	**2E-03**	---	1.06E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	1.50E+00	Y	3.70E-02	---	1.00E+02	**4E-04**	---	3.17E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	1.70E+00	Y	4.19E-02	---	9.77E+01	**4E-04**	---	3.59E-03	2.30E-05		**8E-08**
ETHYL ACETATE	141-78-6	3.10E+00	Y	7.65E-02	---	7.00E+01	**1E-03**	---	6.55E-03	-		**---**
ETHYLBENZENE	100-41-4	7.40E-01	Y	1.83E-02	---	1.00E+03	**2E-05**	---	1.56E-03	2.50E-06		**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.40E+00	Y	1.09E-01	---	NA	**---**	---	9.30E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	8.00E+01	Y	1.97E+00	---	2.00E+02	**1E-02**	---	1.69E-01	-		**---**
M,P-XYLENE	108-38-3	3.00E+00	Y	7.40E-02	---	1.00E+02	**7E-04**	---	6.34E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	9.10E-01	Y	2.24E-02	---	6.00E+02	**4E-05**	---	1.92E-03	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	1.00E-01	Y	2.47E-03	---	3.00E+00	**8E-04**	---	2.11E-04	3.40E-05		**7E-09**
O-XYLENE	95-47-6	1.30E+00	Y	3.21E-02	---	1.00E+02	**3E-04**	---	2.75E-03	-		**---**
TETRACHLOROETHENE	127-18-4	2.20E+02	Y	5.43E+00	---	4.00E+01	**1E-01**	---	4.66E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	1.24E+01	Y	3.05E-01	---	2.00E+00	**2E-01**	---	2.61E-02	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		**---**
VINYL CHLORIDE	75-01-4	2.90E-02	N	7.15E-04	---	8.00E+01	**9E-06**	---	6.13E-05	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0059H**	**Total Inhalation**	**4E-01**	**0E+00**	**9E-07**
		Based on NDs only	**1E-02**	**0E+00**	**7E-08**
		Based on Detects only	**4E-01**	**All ND**	**8E-07**
		Site-related only	**3E-01**	**0E+00**	**4E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0059H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.10E-01	6.41E-03	3.85E-03	NA	NA	1.0E-08		6E-11	4E-11	---	---	**1E-10**
TRICHLOROETHENE	79-01-6	1.24E+01	8.70E-02	5.22E-02	NA	NA	1.0E-06	kidney	9E-08	5E-08	---	---	**1E-07**
TRICHLOROETHENE	79-01-6	1.24E+01	2.61E-02		NA		3.1E-06	NHL+liver	8E-08		---		**8E-08**
VINYL CHLORIDE	75-01-4	2.90E-02	2.04E-04	1.23E-04	NA	NA	4.4E-06		9E-10	5E-10	---	---	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0060H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	8.63E-03	---	4.00E+01	**2E-04**	---	7.40E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	6.17E-03	---	2.00E+00	**3E-03**	---	5.29E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0060H**	**Total Inhalation**	**3E-03**	**0E+00**	**5E-09**
		Based on NDs only	**3E-03**	**0E+00**	**5E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-03**	**0E+00**	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0060H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.76E-03	1.06E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.29E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0061H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime	
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03	

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	8.63E-03	---	4.00E+01	**2E-04**	---	7.40E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	6.17E-03	---	2.00E+00	**3E-03**	---	5.29E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0061H**	**Total Inhalation**	**3E-03**	**0E+00**	**5E-09**
		Based on NDs only	**3E-03**	**0E+00**	**5E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-03**	**0E+00**	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0061H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.76E-03	1.06E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.29E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0062H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	2.59E-04	---	NA	---	---	2.22E-05	5.80E-05		**1E-09**
1,3-BUTADIENE	106-99-0	4.95E-02	N	1.22E-03	---	2.00E+00	**6E-04**	---	1.05E-04	3.00E-05		**3E-09**
1,4-DIOXANE	123-91-1	7.00E-02	N	1.73E-03	---	3.00E+01	**6E-05**	---	1.48E-04	5.00E-06		**7E-10**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	1.73E-04	---	2.00E-01	**9E-04**	---	1.48E-05	1.60E-05		**2E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	4.85E-01	N	1.20E-02	---	2.00E+00	**6E-03**	---	1.03E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.40E-01	Y	5.92E-03	---	6.00E+01	**1E-04**	---	5.07E-04	-		---
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	8.14E-04	---	9.00E+00	**9E-05**	---	6.98E-05	6.00E-04		**4E-08**
1,2-DICHLOROETHANE	107-06-2	1.70E-01	Y	4.19E-03	---	7.00E+00	**6E-04**	---	3.59E-04	2.60E-05		**9E-09**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	2.22E-03	---	4.00E+00	**6E-04**	---	1.90E-04	3.70E-06		**7E-10**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	1.48E-03	---	6.00E+01	**2E-05**	---	1.27E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	1.23E-03	---	8.00E+02	**2E-06**	---	1.06E-04	1.10E-05		**1E-09**
BENZENE	71-43-2	1.00E+00	Y	2.47E-02	---	3.00E+01	**8E-04**	---	2.11E-03	7.80E-06		**2E-08**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	2.10E-03	---	1.00E+00	**2E-03**	---	1.80E-04	4.90E-05		**9E-09**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	3.08E-03	---	NA	---	---	2.64E-04	3.70E-05		**1E-08**
BROMOMETHANE	74-83-9	6.50E-01	N	1.60E-02	---	5.00E+00	**3E-03**	---	1.37E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	9.87E-03	---	1.00E+02	**1E-04**	---	8.46E-04	6.00E-06		**5E-09**
CHLOROFORM	67-66-3	3.40E-01	Y	8.39E-03	---	9.77E+01	**9E-05**	---	7.19E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	3.00E-01	Y	7.40E-03	---	1.00E+03	**7E-06**	---	6.34E-04	2.50E-06		**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	1.60E-02	---	NA	---	---	1.37E-03	2.20E-05		**3E-08**
ISOPROPYL ALCOHOL	67-63-0	1.80E+01	Y	4.44E-01	---	2.00E+02	**2E-03**	---	3.81E-02	-		---
M,P-XYLENE	108-38-3	1.10E+00	Y	2.71E-02	---	1.00E+02	**3E-04**	---	2.33E-03	-		---
METHYLENE CHLORIDE	75-09-2	2.65E-01	N	6.54E-03	---	6.00E+02	**1E-05**	---	5.60E-04	1.00E-08	M	**3E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.60E-01	Y	8.88E-03	---	1.00E+02	**9E-05**	---	7.61E-04	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	Y	1.23E-03	---	4.00E+01	**3E-05**	---	1.06E-04	2.60E-07		**3E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	6.17E-03	---	2.00E+00	**3E-03**	---	5.29E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.00E-03	N	1.97E-04	---	8.00E+01	**2E-06**	---	1.69E-05	4.40E-06	M	**4E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0062H**	**Total Inhalation**	**2E-02**	**0E+00**	**2E-07**
		Based on NDs only	**2E-02**	**0E+00**	**1E-07**
		Based on Detects only	**4E-03**	**All ND**	**5E-08**
		Site-related only	**3E-03**	**0E+00**	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0062H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.65E-01	1.87E-03	1.12E-03	NA	NA	1.0E-08		2E-11	1E-11	---	---	**3E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	1.76E-03	1.06E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.29E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	8.00E-03	5.64E-05	3.38E-05	NA	NA	4.4E-06		2E-10	1E-10	---	---	**4E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0063H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime	
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03	

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	4.00E+00	Y	9.87E-02	---	4.00E+01	**2E-03**	---	8.46E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	6.17E-03	---	2.00E+00	**3E-03**	---	5.29E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0063H**	**Total Inhalation**	**6E-03**	**0E+00**	**7E-09**
		Based on NDs only	**3E-03**	**0E+00**	**4E-09**
		Based on Detects only	**2E-03**	**All ND**	**2E-09**
		Site-related only	**6E-03**	**0E+00**	**7E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0063H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.76E-03	1.06E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.29E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0064H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	1.27E-02	---	NA	---	---	1.09E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	1.66E-01	N	4.09E-03	---	2.00E+00	**2E-03**	---	3.51E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	5.10E-01	Y	1.26E-02	---	3.00E+01	**4E-04**	---	1.08E-03	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	1.01E-02	---	2.00E-01	**5E-02**	---	8.67E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	3.84E-02	---	2.00E+00	**2E-02**	---	3.29E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E-01	Y	2.96E-03	---	6.00E+01	**5E-05**	---	2.54E-04	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	1.48E-02	---	9.00E+00	**2E-03**	---	1.27E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	7.50E-02	Y	1.85E-03	---	7.00E+00	**3E-04**	---	1.59E-04	2.60E-05		**4E-09**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	9.00E-03	---	4.00E+00	**2E-03**	---	7.72E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	1.85E-02	---	6.00E+01	**3E-04**	---	1.59E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	2.22E-02	---	8.00E+02	**3E-05**	---	1.91E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	6.07E-01	Y	1.50E-02	---	3.00E+01	**5E-04**	---	1.28E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	2.36E-02	---	1.00E+00	**2E-02**	---	2.02E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	1.24E-02	---	NA	---	---	1.06E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	5.50E-01	N	1.36E-02	---	5.00E+00	**3E-03**	---	1.16E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	9.87E-03	---	1.00E+02	**1E-04**	---	8.46E-04	6.00E-06		**5E-09**
CHLOROFORM	67-66-3	7.60E-01	Y	1.87E-02	---	9.77E+01	**2E-04**	---	1.61E-03	2.30E-05		**4E-08**
ETHYL ACETATE	141-78-6	2.90E+00	Y	7.15E-02	---	7.00E+01	**1E-03**	---	6.13E-03	-		**---**
ETHYLBENZENE	100-41-4	1.70E+00	Y	4.19E-02	---	1.00E+03	**4E-05**	---	3.59E-03	2.50E-06		**9E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	3.95E-02	---	NA	---	---	3.38E-03	2.20E-05		**7E-08**
ISOPROPYL ALCOHOL	67-63-0	1.00E+01	Y	2.47E-01	---	2.00E+02	**1E-03**	---	2.11E-02	-		**---**
M,P-XYLENE	108-38-3	5.65E+00	Y	1.39E-01	---	1.00E+02	**1E-03**	---	1.19E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	1.10E+00	Y	2.71E-02	---	6.00E+02	**5E-05**	---	2.33E-03	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.52E+00	Y	3.75E-02	---	1.00E+02	**4E-04**	---	3.21E-03	-		**---**
TETRACHLOROETHENE	127-18-4	1.30E+01	Y	3.21E-01	---	4.00E+01	**8E-03**	---	2.75E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	1.50E-01	Y	3.70E-03	---	2.00E+00	**2E-03**	---	3.17E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	3.52E-01	N	8.68E-03	---	2.00E+02	**4E-05**	---	7.44E-04	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	1.60E-03	---	8.00E+01	**2E-05**	---	1.37E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0064H**	**Total Inhalation**	**1E-01**	**0E+00**	**1E-06**
		Based on NDs only	**1E-01**	**0E+00**	**1E-06**
		Based on Detects only	**2E-02**	**All ND**	**8E-08**
		Site-related only	**1E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0064H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.10E+00	7.75E-03	4.65E-03	NA	NA	1.0E-08		8E-11	5E-11	---	---	**1E-10**
TRICHLOROETHENE	79-01-6	1.50E-01	1.06E-03	6.34E-04	NA	NA	1.0E-06	kidney	1E-09	6E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	1.50E-01	3.17E-04		NA		3.1E-06	NHL+liver	1E-09		---		**1E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	4.58E-04	2.75E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0065H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.50E-02	N	1.36E-03	---	NA	**---**	**---**	1.16E-04	5.80E-05		**7E-09**
1,3-BUTADIENE	106-99-0	6.00E-02	N	1.48E-03	---	2.00E+00	**7E-04**	**---**	1.27E-04	3.00E-05		**4E-09**
1,4-DIOXANE	123-91-1	2.35E-01	N	5.80E-03	---	3.00E+01	**2E-04**	**---**	4.97E-04	5.00E-06		**2E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.05E-02	N	9.99E-04	---	2.00E-01	**5E-03**	**---**	8.56E-05	1.60E-05		**1E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	1.65E+00	N	4.07E-02	---	2.00E+00	**2E-02**	**---**	3.49E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.50E-01	Y	1.11E-02	---	6.00E+01	**2E-04**	**---**	9.51E-04	-		**---**
1,2-DIBROMOETHANE	106-93-4	2.95E-02	N	7.28E-04	---	9.00E+00	**8E-05**	**---**	6.24E-05	6.00E-04		**4E-08**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	1.90E-03	---	7.00E+00	**3E-04**	**---**	1.63E-04	2.60E-05		**4E-09**
1,2-DICHLOROPROPANE	78-87-5	1.35E-01	N	3.33E-03	---	4.00E+00	**8E-04**	**---**	2.85E-04	3.70E-06		**1E-09**
1,3,5-Trimethylbenzene	108-67-8	1.20E-01	N	2.96E-03	---	6.00E+01	**5E-05**	**---**	2.54E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	N	2.10E-03	---	8.00E+02	**3E-06**	**---**	1.80E-04	1.10E-05		**2E-09**
BENZENE	71-43-2	8.60E-01	Y	2.12E-02	---	3.00E+01	**7E-04**	**---**	1.82E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	1.25E-01	N	3.08E-03	---	1.00E+00	**3E-03**	**---**	2.64E-04	4.90E-05		**1E-08**
BROMODICHLOROMETHANE	75-27-4	2.95E-01	N	7.28E-03	---	NA	**---**	**---**	6.24E-04	3.70E-05		**2E-08**
BROMOMETHANE	74-83-9	4.15E-01	N	1.02E-02	---	5.00E+00	**2E-03**	**---**	8.77E-04	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.40E-01	Y	1.33E-02	---	1.00E+02	**1E-04**	**---**	1.14E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	6.70E-01	Y	1.65E-02	---	9.77E+01	**2E-04**	**---**	1.42E-03	2.30E-05		**3E-08**
ETHYL ACETATE	141-78-6	2.00E+00	Y	4.93E-02	---	7.00E+01	**7E-04**	**---**	4.23E-03	-		**---**
ETHYLBENZENE	100-41-4	3.60E-01	Y	8.88E-03	---	1.00E+03	**9E-06**	**---**	7.61E-04	2.50E-06		**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	2.20E+00	N	5.43E-02	---	NA	**---**	**---**	4.65E-03	2.20E-05		**1E-07**
ISOPROPYL ALCOHOL	67-63-0	1.00E+01	Y	2.47E-01	---	2.00E+02	**1E-03**	**---**	2.11E-02	-		**---**
M,P-XYLENE	108-38-3	1.40E+00	Y	3.45E-02	---	1.00E+02	**3E-04**	**---**	2.96E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	6.20E-01	Y	1.53E-02	---	6.00E+02	**3E-05**	**---**	1.31E-03	1.00E-08	M	**7E-11**
NAPHTHALENE	91-20-3	4.50E-02	Y	1.11E-03	---	3.00E+00	**4E-04**	**---**	9.51E-05	3.40E-05		**3E-09**
O-XYLENE	95-47-6	4.60E-01	Y	1.13E-02	---	1.00E+02	**1E-04**	**---**	9.73E-04	-		**---**
TETRACHLOROETHENE	127-18-4	1.60E-01	Y	3.95E-03	---	4.00E+01	**1E-04**	**---**	3.38E-04	2.60E-07		**9E-11**
TRICHLOROETHENE	79-01-6	9.00E-02	N	2.22E-03	---	2.00E+00	**1E-03**	**---**	1.90E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	2.40E-02	N	5.92E-04	---	8.00E+01	**7E-06**	**---**	5.07E-05	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0065H**	**Total Inhalation**	**4E-02**	**0E+00**	**3E-07**
		Based on NDs only	**3E-02**	**0E+00**	**2E-07**
		Based on Detects only	**4E-03**	**All ND**	**6E-08**
		Site-related only	**1E-03**	**0E+00**	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0065H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.20E-01	4.37E-03	2.62E-03	NA	NA	1.0E-08		4E-11	3E-11	---	---	**7E-11**
TRICHLOROETHENE	79-01-6	9.00E-02	6.34E-04	3.81E-04	NA	NA	1.0E-06	kidney	6E-10	4E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	1.90E-04		NA		3.1E-06	NHL+liver	6E-10		---		**6E-10**
VINYL CHLORIDE	75-01-4	2.40E-02	1.69E-04	1.01E-04	NA	NA	4.4E-06		7E-10	4E-10	---	---	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0066H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.25E-02	N	5.55E-04	---	NA	**---**	**---**	4.76E-05	5.80E-05		**3E-09**
1,3-BUTADIENE	106-99-0	1.00E-01	N	2.47E-03	---	2.00E+00	**1E-03**	**---**	2.11E-04	3.00E-05		**6E-09**
1,4-DIOXANE	123-91-1	4.30E-01	Y	1.06E-02	---	3.00E+01	**4E-04**	**---**	9.09E-04	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	2.10E-02	N	5.18E-04	---	2.00E-01	**3E-03**	**---**	4.44E-05	1.60E-05		**7E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	1.73E-02	---	2.00E+00	**9E-03**	**---**	1.48E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.30E-01	Y	1.06E-02	---	6.00E+01	**2E-04**	**---**	9.09E-04	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	1.85E-03	---	9.00E+00	**2E-04**	**---**	1.59E-04	6.00E-04		**1E-07**
1,2-DICHLOROETHANE	107-06-2	3.50E-01	Y	8.63E-03	---	7.00E+00	**1E-03**	**---**	7.40E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	2.59E-03	---	4.00E+00	**6E-04**	**---**	2.22E-04	3.70E-06		**8E-10**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	3.21E-03	---	6.00E+01	**5E-05**	**---**	2.75E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	N	2.10E-03	---	8.00E+02	**3E-06**	**---**	1.80E-04	1.10E-05		**2E-09**
BENZENE	71-43-2	9.90E-01	Y	2.44E-02	---	3.00E+01	**8E-04**	**---**	2.09E-03	7.80E-06		**2E-08**
BENZYL CHLORIDE	100-44-7	2.50E-01	N	6.17E-03	---	1.00E+00	**6E-03**	**---**	5.29E-04	4.90E-05		**3E-08**
BROMODICHLOROMETHANE	75-27-4	2.55E-01	N	6.29E-03	---	NA	**---**	**---**	5.39E-04	3.70E-05		**2E-08**
BROMOMETHANE	74-83-9	8.50E-01	N	2.10E-02	---	5.00E+00	**4E-03**	**---**	1.80E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	1.13E-02	---	1.00E+02	**1E-04**	**---**	9.73E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	6.30E-01	Y	1.55E-02	---	9.77E+01	**2E-04**	**---**	1.33E-03	2.30E-05		**3E-08**
ETHYL ACETATE	141-78-6	6.70E+00	Y	1.65E-01	---	7.00E+01	**2E-03**	**---**	1.42E-02	-		**---**
ETHYLBENZENE	100-41-4	5.10E-01	Y	1.26E-02	---	1.00E+03	**1E-05**	**---**	1.08E-03	2.50E-06		**3E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	1.97E-02	---	NA	**---**	**---**	1.69E-03	2.20E-05		**4E-08**
ISOPROPYL ALCOHOL	67-63-0	1.10E+01	Y	2.71E-01	---	2.00E+02	**1E-03**	**---**	2.33E-02	-		**---**
M,P-XYLENE	108-38-3	1.50E+00	Y	3.70E-02	---	1.00E+02	**4E-04**	**---**	3.17E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	3.35E-01	N	8.26E-03	---	6.00E+02	**1E-05**	**---**	7.08E-04	1.00E-08	M	**4E-11**
NAPHTHALENE	91-20-3	2.55E-02	N	6.29E-04	---	3.00E+00	**2E-04**	**---**	5.39E-05	3.40E-05		**2E-09**
O-XYLENE	95-47-6	3.70E-01	Y	9.13E-03	---	1.00E+02	**9E-05**	**---**	7.82E-04	-		**---**
TETRACHLOROETHENE	127-18-4	9.40E-02	Y	2.32E-03	---	4.00E+01	**6E-05**	**---**	1.99E-04	2.60E-07		**5E-11**
TRICHLOROETHENE	79-01-6	1.90E-01	Y	4.69E-03	---	2.00E+00	**2E-03**	**---**	4.02E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	7.00E-03	N	1.73E-04	---	8.00E+01	**2E-06**	**---**	1.48E-05	4.40E-06	M	**3E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0066H**	**Total Inhalation**	**3E-02**	**0E+00**	**3E-07**
		Based on NDs only	**2E-02**	**0E+00**	**2E-07**
		Based on Detects only	**9E-03**	**All ND**	**8E-08**
		Site-related only	**3E-03**	**0E+00**	**8E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0066H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.35E-01	2.36E-03	1.42E-03	NA	NA	1.0E-08		2E-11	1E-11	---	---	**4E-11**
TRICHLOROETHENE	79-01-6	1.90E-01	1.34E-03	8.03E-04	NA	NA	1.0E-06	kidney	1E-09	8E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	1.90E-01	4.02E-04		NA		3.1E-06	NHL+liver	1E-09		---		**1E-09**
VINYL CHLORIDE	75-01-4	7.00E-03	4.93E-05	2.96E-05	NA	NA	4.4E-06		2E-10	1E-10	---	---	**3E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0069H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	3.00E-02	N	7.40E-04	---	NA	**---**	**---**	6.34E-05	5.80E-05		**4E-09**
1,3-BUTADIENE	106-99-0	1.35E-01	N	3.33E-03	---	2.00E+00	**2E-03**	**---**	2.85E-04	3.00E-05		**9E-09**
1,4-DIOXANE	123-91-1	2.90E-01	Y	7.15E-03	---	3.00E+01	**2E-04**	**---**	6.13E-04	5.00E-06		**3E-09**
1,1,2-TRICHLOROETHANE	79-00-5	2.80E-02	N	6.91E-04	---	2.00E-01	**3E-03**	**---**	5.92E-05	1.60E-05		**9E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	9.00E-01	N	2.22E-02	---	2.00E+00	**1E-02**	**---**	1.90E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	8.30E-01	Y	2.05E-02	---	6.00E+01	**3E-04**	**---**	1.75E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	1.00E-01	N	2.47E-03	---	9.00E+00	**3E-04**	**---**	2.11E-04	6.00E-04		**1E-07**
1,2-DICHLOROETHANE	107-06-2	1.40E+00	Y	3.45E-02	---	7.00E+00	**5E-03**	**---**	2.96E-03	2.60E-05		**8E-08**
1,2-DICHLOROPROPANE	78-87-5	1.40E-01	N	3.45E-03	---	4.00E+00	**9E-04**	**---**	2.96E-04	3.70E-06		**1E-09**
1,3,5-Trimethylbenzene	108-67-8	1.70E-01	N	4.19E-03	---	6.00E+01	**7E-05**	**---**	3.59E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	Y	2.10E-03	---	8.00E+02	**3E-06**	**---**	1.80E-04	1.10E-05		**2E-09**
BENZENE	71-43-2	8.40E-01	Y	2.07E-02	---	3.00E+01	**7E-04**	**---**	1.78E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	3.40E-01	N	8.39E-03	---	1.00E+00	**8E-03**	**---**	7.19E-04	4.90E-05		**4E-08**
BROMODICHLOROMETHANE	75-27-4	3.45E-01	N	8.51E-03	---	NA	**---**	**---**	7.29E-04	3.70E-05		**3E-08**
BROMOMETHANE	74-83-9	1.15E+00	N	2.84E-02	---	5.00E+00	**6E-03**	**---**	2.43E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	1.09E-02	---	1.00E+02	**1E-04**	**---**	9.30E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	6.00E-01	Y	1.48E-02	---	9.77E+01	**2E-04**	**---**	1.27E-03	2.30E-05		**3E-08**
ETHYL ACETATE	141-78-6	1.10E+00	Y	2.71E-02	---	7.00E+01	**4E-04**	**---**	2.33E-03	-		**---**
ETHYLBENZENE	100-41-4	2.30E-01	Y	5.67E-03	---	1.00E+03	**6E-06**	**---**	4.86E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.10E+00	N	2.71E-02	---	NA	**---**	**---**	2.33E-03	2.20E-05		**5E-08**
ISOPROPYL ALCOHOL	67-63-0	4.60E+00	Y	1.13E-01	---	2.00E+02	**6E-04**	**---**	9.73E-03	-		**---**
M,P-XYLENE	108-38-3	8.70E-01	Y	2.15E-02	---	1.00E+02	**2E-04**	**---**	1.84E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	7.90E-01	Y	1.95E-02	---	6.00E+02	**3E-05**	**---**	1.67E-03	1.00E-08	M	**9E-11**
NAPHTHALENE	91-20-3	2.70E-02	N	6.66E-04	---	3.00E+00	**2E-04**	**---**	5.71E-05	3.40E-05		**2E-09**
O-XYLENE	95-47-6	3.60E-01	Y	8.88E-03	---	1.00E+02	**9E-05**	**---**	7.61E-04	-		**---**
TETRACHLOROETHENE	127-18-4	3.40E-01	Y	8.39E-03	---	4.00E+01	**2E-04**	**---**	7.19E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	1.30E-01	Y	3.21E-03	---	2.00E+00	**2E-03**	**---**	2.75E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	9.00E-03	N	2.22E-04	---	8.00E+01	**3E-06**	**---**	1.90E-05	4.40E-06	M	**4E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0069H**	**Total Inhalation**	**4E-02**	**0E+00**	**4E-07**
		Based on NDs only	**3E-02**	**0E+00**	**3E-07**
		Based on Detects only	**1E-02**	**All ND**	**1E-07**
		Site-related only	**2E-03**	**0E+00**	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0069H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.90E-01	5.57E-03	3.34E-03	NA	NA	1.0E-08		6E-11	3E-11	---	---	**9E-11**
TRICHLOROETHENE	79-01-6	1.30E-01	9.16E-04	5.50E-04	NA	NA	1.0E-06	kidney	9E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	1.30E-01	2.75E-04		NA		3.1E-06	NHL+liver	9E-10		---		**9E-10**
VINYL CHLORIDE	75-01-4	9.00E-03	6.34E-05	3.81E-05	NA	NA	4.4E-06		3E-10	2E-10	---	---	**4E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0071H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	5.30E-04	---	NA	**---**	**---**	4.55E-05	5.80E-05		**3E-09**
1,3-BUTADIENE	106-99-0	9.50E-02	N	2.34E-03	---	2.00E+00	**1E-03**	**---**	2.01E-04	3.00E-05		**6E-09**
1,4-DIOXANE	123-91-1	6.00E-02	N	1.48E-03	---	3.00E+01	**5E-05**	**---**	1.27E-04	5.00E-06		**6E-10**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	4.93E-04	---	2.00E-01	**2E-03**	**---**	4.23E-05	1.60E-05		**7E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	1.60E-02	---	2.00E+00	**8E-03**	**---**	1.37E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E-01	N	3.45E-03	---	6.00E+01	**6E-05**	**---**	2.96E-04	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	1.73E-03	---	9.00E+00	**2E-04**	**---**	1.48E-04	6.00E-04		**9E-08**
1,2-DICHLOROETHANE	107-06-2	8.00E-01	Y	1.97E-02	---	7.00E+00	**3E-03**	**---**	1.69E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	2.47E-03	---	4.00E+00	**6E-04**	**---**	2.11E-04	3.70E-06		**8E-10**
1,3,5-Trimethylbenzene	108-67-8	1.20E-01	N	2.96E-03	---	6.00E+01	**5E-05**	**---**	2.54E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	1.97E-03	---	8.00E+02	**2E-06**	**---**	1.69E-04	1.10E-05		**2E-09**
BENZENE	71-43-2	6.50E-01	Y	1.60E-02	---	3.00E+01	**5E-04**	**---**	1.37E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	2.40E-01	N	5.92E-03	---	1.00E+00	**6E-03**	**---**	5.07E-04	4.90E-05		**2E-08**
BROMODICHLOROMETHANE	75-27-4	2.45E-01	N	6.04E-03	---	NA	**---**	**---**	5.18E-04	3.70E-05		**2E-08**
BROMOMETHANE	74-83-9	8.00E-01	N	1.97E-02	---	5.00E+00	**4E-03**	**---**	1.69E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	1.13E-02	---	1.00E+02	**1E-04**	**---**	9.73E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	1.60E+00	Y	3.95E-02	---	9.77E+01	**4E-04**	**---**	3.38E-03	2.30E-05		**8E-08**
ETHYL ACETATE	141-78-6	2.60E+01	Y	6.41E-01	---	7.00E+01	**9E-03**	**---**	5.50E-02	-		**---**
ETHYLBENZENE	100-41-4	3.00E-01	Y	7.40E-03	---	1.00E+03	**7E-06**	**---**	6.34E-04	2.50E-06		**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	1.97E-02	---	NA	**---**	**---**	1.69E-03	2.20E-05		**4E-08**
ISOPROPYL ALCOHOL	67-63-0	4.30E+00	Y	1.06E-01	---	2.00E+02	**5E-04**	**---**	9.09E-03	-		**---**
M,P-XYLENE	108-38-3	8.50E-01	Y	2.10E-02	---	1.00E+02	**2E-04**	**---**	1.80E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	3.15E-01	N	7.77E-03	---	6.00E+02	**1E-05**	**---**	6.66E-04	1.00E-08	M	**4E-11**
NAPHTHALENE	91-20-3	2.75E-02	N	6.78E-04	---	3.00E+00	**2E-04**	**---**	5.81E-05	3.40E-05		**2E-09**
O-XYLENE	95-47-6	3.20E-01	Y	7.89E-03	---	1.00E+02	**8E-05**	**---**	6.77E-04	-		**---**
TETRACHLOROETHENE	127-18-4	3.30E-01	Y	8.14E-03	---	4.00E+01	**2E-04**	**---**	6.98E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	N	1.23E-03	---	2.00E+00	**6E-04**	**---**	1.06E-04	4.10E-06	M	**9E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-03	N	1.60E-04	---	8.00E+01	**2E-06**	**---**	1.37E-05	4.40E-06	M	**3E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0071H**	**Total Inhalation**	**4E-02**	**0E+00**	**3E-07**
		Based on NDs only	**2E-02**	**0E+00**	**2E-07**
		Based on Detects only	**1E-02**	**All ND**	**1E-07**
		Site-related only	**9E-04**	**0E+00**	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0071H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.15E-01	2.22E-03	1.33E-03	NA	NA	1.0E-08		2E-11	1E-11	---	---	**4E-11**
TRICHLOROETHENE	79-01-6	5.00E-02	3.52E-04	2.11E-04	NA	NA	1.0E-06	kidney	4E-10	2E-10	---	---	**6E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	1.06E-04		NA		3.1E-06	NHL+liver	3E-10		---		**3E-10**
VINYL CHLORIDE	75-01-4	6.50E-03	4.58E-05	2.75E-05	NA	NA	4.4E-06		2E-10	1E-10	---	---	**3E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0072H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.90E-02	N	7.15E-04	---	NA	---	---	6.13E-05	5.80E-05		**4E-09**
1,3-BUTADIENE	106-99-0	6.00E-02	N	1.48E-03	---	2.00E+00	**7E-04**	---	1.27E-04	3.00E-05		**4E-09**
1,4-DIOXANE	123-91-1	1.00E-01	N	2.47E-03	---	3.00E+01	**8E-05**	---	2.11E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.40E-02	N	3.45E-04	---	2.00E-01	**2E-03**	---	2.96E-05	1.60E-05		**5E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	1.48E-02	---	2.00E+00	**7E-03**	---	1.27E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.70E-01	Y	6.66E-03	---	6.00E+01	**1E-04**	---	5.71E-04	-		---
1,2-DIBROMOETHANE	106-93-4	5.00E-02	N	1.23E-03	---	9.00E+00	**1E-04**	---	1.06E-04	6.00E-04		**6E-08**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	2.71E-03	---	7.00E+00	**4E-04**	---	2.33E-04	2.60E-05		**6E-09**
1,2-DICHLOROPROPANE	78-87-5	1.15E-01	N	2.84E-03	---	4.00E+00	**7E-04**	---	2.43E-04	3.70E-06		**9E-10**
1,3,5-Trimethylbenzene	108-67-8	9.50E-02	N	2.34E-03	---	6.00E+01	**4E-05**	---	2.01E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	1.36E-03	---	8.00E+02	**2E-06**	---	1.16E-04	1.10E-05		**1E-09**
BENZENE	71-43-2	4.00E-01	Y	9.87E-03	---	3.00E+01	**3E-04**	---	8.46E-04	7.80E-06		**7E-09**
BENZYL CHLORIDE	100-44-7	1.30E-01	N	3.21E-03	---	1.00E+00	**3E-03**	---	2.75E-04	4.90E-05		**1E-08**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	3.21E-03	---	NA	---	---	2.75E-04	3.70E-05		**1E-08**
BROMOMETHANE	74-83-9	7.00E-01	N	1.73E-02	---	5.00E+00	**3E-03**	---	1.48E-03	-		---
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	9.37E-03	---	1.00E+02	**9E-05**	---	8.03E-04	6.00E-06		**5E-09**
CHLOROFORM	67-66-3	2.90E-01	Y	7.15E-03	---	9.77E+01	**7E-05**	---	6.13E-04	2.30E-05		**1E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.10E-01	Y	5.18E-03	---	1.00E+03	**5E-06**	---	4.44E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.90E-01	N	1.21E-02	---	NA	---	---	1.04E-03	2.20E-05		**2E-08**
ISOPROPYL ALCOHOL	67-63-0	3.10E+01	Y	7.65E-01	---	2.00E+02	**4E-03**	---	6.55E-02	-		---
M,P-XYLENE	108-38-3	6.80E-01	Y	1.68E-02	---	1.00E+02	**2E-04**	---	1.44E-03	-		---
METHYLENE CHLORIDE	75-09-2	7.20E-01	Y	1.78E-02	---	6.00E+02	**3E-05**	---	1.52E-03	1.00E-08	M	**8E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.50E-01	Y	6.17E-03	---	1.00E+02	**6E-05**	---	5.29E-04	-		---
TETRACHLOROETHENE	127-18-4	2.40E-01	Y	5.92E-03	---	4.00E+01	**1E-04**	---	5.07E-04	2.60E-07		**1E-10**
TRICHLOROETHENE	79-01-6	2.80E-02	Y	6.91E-04	---	2.00E+00	**3E-04**	---	5.92E-05	4.10E-06	M	**5E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	4.60E-03	N	1.13E-04	---	8.00E+01	**1E-06**	---	9.73E-06	4.40E-06	M	**2E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0072H**	**Total Inhalation**	**2E-02**	**0E+00**	**2E-07**
		Based on NDs only	**2E-02**	**0E+00**	**1E-07**
		Based on Detects only	**6E-03**	**All ND**	**3E-08**
		Site-related only	**6E-04**	**0E+00**	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0072H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.20E-01	5.07E-03	3.04E-03	NA	NA	1.0E-08		5E-11	3E-11	---	---	**8E-11**
TRICHLOROETHENE	79-01-6	2.80E-02	1.97E-04	1.18E-04	NA	NA	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	2.80E-02	5.92E-05		NA		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	4.60E-03	3.24E-05	1.95E-05	NA	NA	4.4E-06		1E-10	9E-11	---	---	**2E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0076H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.25E-02	N	5.55E-04	---	NA	**---**	**---**	4.76E-05	5.80E-05		**3E-09**
1,3-BUTADIENE	106-99-0	1.00E-01	N	2.47E-03	---	2.00E+00	**1E-03**	**---**	2.11E-04	3.00E-05		**6E-09**
1,4-DIOXANE	123-91-1	2.50E-01	Y	6.17E-03	---	3.00E+01	**2E-04**	**---**	5.29E-04	5.00E-06		**3E-09**
1,1,2-TRICHLOROETHANE	79-00-5	2.10E-02	N	5.18E-04	---	2.00E-01	**3E-03**	**---**	4.44E-05	1.60E-05		**7E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	1.73E-02	---	2.00E+00	**9E-03**	**---**	1.48E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.70E+00	Y	4.19E-02	---	6.00E+01	**7E-04**	**---**	3.59E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	1.85E-03	---	9.00E+00	**2E-04**	**---**	1.59E-04	6.00E-04		**1E-07**
1,2-DICHLOROETHANE	107-06-2	1.20E-01	Y	2.96E-03	---	7.00E+00	**4E-04**	**---**	2.54E-04	2.60E-05		**7E-09**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	2.59E-03	---	4.00E+00	**6E-04**	**---**	2.22E-04	3.70E-06		**8E-10**
1,3,5-Trimethylbenzene	108-67-8	4.10E-01	Y	1.01E-02	---	6.00E+01	**2E-04**	**---**	8.67E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	N	2.10E-03	---	8.00E+02	**3E-06**	**---**	1.80E-04	1.10E-05		**2E-09**
BENZENE	71-43-2	3.40E+00	Y	8.39E-02	---	3.00E+01	**3E-03**	**---**	7.19E-03	7.80E-06		**6E-08**
BENZYL CHLORIDE	100-44-7	2.50E-01	N	6.17E-03	---	1.00E+00	**6E-03**	**---**	5.29E-04	4.90E-05		**3E-08**
BROMODICHLOROMETHANE	75-27-4	2.55E-01	N	6.29E-03	---	NA	**---**	**---**	5.39E-04	3.70E-05		**2E-08**
BROMOMETHANE	74-83-9	8.50E-01	N	2.10E-02	---	5.00E+00	**4E-03**	**---**	1.80E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	1.13E-02	---	1.00E+02	**1E-04**	**---**	9.73E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	7.50E-01	Y	1.85E-02	---	9.77E+01	**2E-04**	**---**	1.59E-03	2.30E-05		**4E-08**
ETHYL ACETATE	141-78-6	4.90E+00	Y	1.21E-01	---	7.00E+01	**2E-03**	**---**	1.04E-02	-		**---**
ETHYLBENZENE	100-41-4	1.80E+00	Y	4.44E-02	---	1.00E+03	**4E-05**	**---**	3.81E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	1.97E-02	---	NA	**---**	**---**	1.69E-03	2.20E-05		**4E-08**
ISOPROPYL ALCOHOL	67-63-0	8.50E+00	Y	2.10E-01	---	2.00E+02	**1E-03**	**---**	1.80E-02	-		**---**
M,P-XYLENE	108-38-3	8.60E+00	Y	2.12E-01	---	1.00E+02	**2E-03**	**---**	1.82E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	8.30E-01	Y	2.05E-02	---	6.00E+02	**3E-05**	**---**	1.75E-03	1.00E-08	M	**9E-11**
NAPHTHALENE	91-20-3	2.90E-02	N	7.15E-04	---	3.00E+00	**2E-04**	**---**	6.13E-05	3.40E-05		**2E-09**
O-XYLENE	95-47-6	2.20E+00	Y	5.43E-02	---	1.00E+02	**5E-04**	**---**	4.65E-03	-		**---**
TETRACHLOROETHENE	127-18-4	4.90E-02	Y	1.21E-03	---	4.00E+01	**3E-05**	**---**	1.04E-04	2.60E-07		**3E-11**
TRICHLOROETHENE	79-01-6	5.00E-02	N	1.23E-03	---	2.00E+00	**6E-04**	**---**	1.06E-04	4.10E-06	M	**9E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	7.00E-03	N	1.73E-04	---	8.00E+01	**2E-06**	**---**	1.48E-05	4.40E-06	M	**3E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0076H**	**Total Inhalation**	**3E-02**	**0E+00**	**3E-07**
		Based on NDs only	**2E-02**	**0E+00**	**2E-07**
		Based on Detects only	**1E-02**	**All ND**	**1E-07**
		Site-related only	**9E-04**	**0E+00**	**4E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0076H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.30E-01	5.85E-03	3.51E-03	NA	NA	1.0E-08		6E-11	4E-11	---	---	**9E-11**
TRICHLOROETHENE	79-01-6	5.00E-02	3.52E-04	2.11E-04	NA	NA	1.0E-06	kidney	4E-10	2E-10	---	---	**6E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	1.06E-04		NA		3.1E-06	NHL+liver	3E-10		---		**3E-10**
VINYL CHLORIDE	75-01-4	7.00E-03	4.93E-05	2.96E-05	NA	NA	4.4E-06		2E-10	1E-10	---	---	**3E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0091H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.20E-02	N	5.43E-04	---	NA	---	---	4.65E-05	5.80E-05		**3E-09**
1,3-BUTADIENE	106-99-0	1.00E-01	N	2.47E-03	---	2.00E+00	**1E-03**	---	2.11E-04	3.00E-05		**6E-09**
1,4-DIOXANE	123-91-1	2.80E-01	Y	6.91E-03	---	3.00E+01	**2E-04**	---	5.92E-04	5.00E-06		**3E-09**
1,1,2-TRICHLOROETHANE	79-00-5	2.05E-02	N	5.06E-04	---	2.00E-01	**3E-03**	---	4.33E-05	1.60E-05		**7E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	1.00E+00	N	2.47E-02	---	2.00E+00	**1E-02**	---	2.11E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.10E-01	Y	1.26E-02	---	6.00E+01	**2E-04**	---	1.08E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	1.73E-03	---	9.00E+00	**2E-04**	---	1.48E-04	6.00E-04		**9E-08**
1,2-DICHLOROETHANE	107-06-2	4.70E-01	Y	1.16E-02	---	7.00E+00	**2E-03**	---	9.94E-04	2.60E-05		**3E-08**
1,2-DICHLOROPROPANE	78-87-5	1.10E-01	Y	2.71E-03	---	4.00E+00	**7E-04**	---	2.33E-04	3.70E-06		**9E-10**
1,3,5-Trimethylbenzene	108-67-8	1.25E-01	N	3.08E-03	---	6.00E+01	**5E-05**	---	2.64E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	1.30E-01	Y	3.21E-03	---	8.00E+02	**4E-06**	---	2.75E-04	1.10E-05		**3E-09**
BENZENE	71-43-2	8.30E-01	Y	2.05E-02	---	3.00E+01	**7E-04**	---	1.75E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	6.04E-03	---	1.00E+00	**6E-03**	---	5.18E-04	4.90E-05		**3E-08**
BROMODICHLOROMETHANE	75-27-4	6.80E-01	Y	1.68E-02	---	NA	---	---	1.44E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	8.00E-01	N	1.97E-02	---	5.00E+00	**4E-03**	---	1.69E-03	-		---
CARBON TETRACHLORIDE	56-23-5	7.70E-01	Y	1.90E-02	---	1.00E+02	**2E-04**	---	1.63E-03	6.00E-06		**1E-08**
CHLOROFORM	67-66-3	3.80E+00	Y	9.37E-02	---	9.77E+01	**1E-03**	---	8.03E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	8.20E+00	Y	2.02E-01	---	7.00E+01	**3E-03**	---	1.73E-02	-		---
ETHYLBENZENE	100-41-4	6.60E-01	Y	1.63E-02	---	1.00E+03	**2E-05**	---	1.40E-03	2.50E-06		**3E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	1.97E-02	---	NA	---	---	1.69E-03	2.20E-05		**4E-08**
ISOPROPYL ALCOHOL	67-63-0	5.60E+01	Y	1.38E+00	---	2.00E+02	**7E-03**	---	1.18E-01	-		---
M,P-XYLENE	108-38-3	1.90E+00	Y	4.69E-02	---	1.00E+02	**5E-04**	---	4.02E-03	-		---
METHYLENE CHLORIDE	75-09-2	1.10E+00	Y	2.71E-02	---	6.00E+02	**5E-05**	---	2.33E-03	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	2.75E-02	N	6.78E-04	---	3.00E+00	**2E-04**	---	5.81E-05	3.40E-05		**2E-09**
O-XYLENE	95-47-6	7.20E-01	Y	1.78E-02	---	1.00E+02	**2E-04**	---	1.52E-03	-		---
TETRACHLOROETHENE	127-18-4	1.80E+01	Y	4.44E-01	---	4.00E+01	**1E-02**	---	3.81E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	4.30E-01	Y	1.06E-02	---	2.00E+00	**5E-03**	---	9.09E-04	4.10E-06	M	**8E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	6.50E-03	N	1.60E-04	---	8.00E+01	**2E-06**	---	1.37E-05	4.40E-06	M	**3E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0091H**	**Total Inhalation**	**6E-02**	**0E+00**	**5E-07**
		Based on NDs only	**3E-02**	**0E+00**	**2E-07**
		Based on Detects only	**3E-02**	**All ND**	**3E-07**
		Site-related only	**2E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0091H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.10E+00	7.75E-03	4.65E-03	NA	NA	1.0E-08		8E-11	5E-11	---	---	**1E-10**
TRICHLOROETHENE	79-01-6	4.30E-01	3.03E-03	1.82E-03	NA	NA	1.0E-06	kidney	3E-09	2E-09	---	---	**5E-09**
TRICHLOROETHENE	79-01-6	4.30E-01	9.09E-04		NA		3.1E-06	NHL+liver	3E-09		---		**3E-09**
VINYL CHLORIDE	75-01-4	6.50E-03	4.58E-05	2.75E-05	NA	NA	4.4E-06		2E-10	1E-10	---	---	**3E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0098H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	5.30E-04	---	NA	---	---	4.55E-05	5.80E-05		**3E-09**
1,3-BUTADIENE	106-99-0	1.00E-01	N	2.47E-03	---	2.00E+00	**1E-03**	---	2.11E-04	3.00E-05		**6E-09**
1,4-DIOXANE	123-91-1	1.80E-01	Y	4.44E-03	---	3.00E+01	**1E-04**	---	3.81E-04	5.00E-06		**2E-09**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	4.93E-04	---	2.00E-01	**2E-03**	---	4.23E-05	1.60E-05		**7E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	1.60E-02	---	2.00E+00	**8E-03**	---	1.37E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.30E+00	Y	3.21E-02	---	6.00E+01	**5E-04**	---	2.75E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	1.73E-03	---	9.00E+00	**2E-04**	---	1.48E-04	6.00E-04		**9E-08**
1,2-DICHLOROETHANE	107-06-2	9.10E-02	Y	2.24E-03	---	7.00E+00	**3E-04**	---	1.92E-04	2.60E-05		**5E-09**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	2.47E-03	---	4.00E+00	**6E-04**	---	2.11E-04	3.70E-06		**8E-10**
1,3,5-Trimethylbenzene	108-67-8	3.30E-01	Y	8.14E-03	---	6.00E+01	**1E-04**	---	6.98E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	1.30E+00	Y	3.21E-02	---	8.00E+02	**4E-05**	---	2.75E-03	1.10E-05		**3E-08**
BENZENE	71-43-2	5.30E+00	Y	1.31E-01	---	3.00E+01	**4E-03**	---	1.12E-02	7.80E-06		**9E-08**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	6.04E-03	---	1.00E+00	**6E-03**	---	5.18E-04	4.90E-05		**3E-08**
BROMODICHLOROMETHANE	75-27-4	2.45E-01	N	6.04E-03	---	NA	---	---	5.18E-04	3.70E-05		**2E-08**
BROMOMETHANE	74-83-9	8.00E-01	N	1.97E-02	---	5.00E+00	**4E-03**	---	1.69E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	1.11E-02	---	1.00E+02	**1E-04**	---	9.51E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	4.60E-01	Y	1.13E-02	---	9.77E+01	**1E-04**	---	9.73E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	1.50E+00	Y	3.70E-02	---	7.00E+01	**5E-04**	---	3.17E-03	-		---
ETHYLBENZENE	100-41-4	3.00E+00	Y	7.40E-02	---	1.00E+03	**7E-05**	---	6.34E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	1.97E-02	---	NA	---	---	1.69E-03	2.20E-05		**4E-08**
ISOPROPYL ALCOHOL	67-63-0	5.40E+00	Y	1.33E-01	---	2.00E+02	**7E-04**	---	1.14E-02	-		---
M,P-XYLENE	108-38-3	1.30E+01	Y	3.21E-01	---	1.00E+02	**3E-03**	---	2.75E-02	-		---
METHYLENE CHLORIDE	75-09-2	4.55E-01	N	1.12E-02	---	6.00E+02	**2E-05**	---	9.62E-04	1.00E-08	M	**5E-11**
NAPHTHALENE	91-20-3	2.50E-02	N	6.17E-04	---	3.00E+00	**2E-04**	---	5.29E-05	3.40E-05		**2E-09**
O-XYLENE	95-47-6	3.50E+00	Y	8.63E-02	---	1.00E+02	**9E-04**	---	7.40E-03	-		---
TETRACHLOROETHENE	127-18-4	1.20E+00	Y	2.96E-02	---	4.00E+01	**7E-04**	---	2.54E-03	2.60E-07		**7E-10**
TRICHLOROETHENE	79-01-6	7.80E-01	Y	1.92E-02	---	2.00E+00	**1E-02**	---	1.65E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	6.50E-03	N	1.60E-04	---	8.00E+01	**2E-06**	---	1.37E-05	4.40E-06	M	**3E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0098H**	**Total Inhalation**	**4E-02**	**0E+00**	**4E-07**
		Based on NDs only	**2E-02**	**0E+00**	**2E-07**
		Based on Detects only	**2E-02**	**All ND**	**2E-07**
		Site-related only	**1E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0098H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.55E-01	3.21E-03	1.92E-03	NA	NA	1.0E-08		3E-11	2E-11	---	---	**5E-11**
TRICHLOROETHENE	79-01-6	7.80E-01	5.50E-03	3.30E-03	NA	NA	1.0E-06	kidney	5E-09	3E-09	---	---	**9E-09**
TRICHLOROETHENE	79-01-6	7.80E-01	1.65E-03		NA		3.1E-06	NHL+liver	5E-09		---		**5E-09**
VINYL CHLORIDE	75-01-4	6.50E-03	4.58E-05	2.75E-05	NA	NA	4.4E-06		2E-10	1E-10	---	---	**3E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0102H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.50E-02	N	3.70E-04	---	NA	---	---	3.17E-05	5.80E-05		**2E-09**
1,3-BUTADIENE	106-99-0	2.90E-02	N	7.15E-04	---	2.00E+00	**4E-04**	---	6.13E-05	3.00E-05		**2E-09**
1,4-DIOXANE	123-91-1	4.20E-01	Y	1.04E-02	---	3.00E+01	**3E-04**	---	8.88E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	8.50E-03	N	2.10E-04	---	2.00E-01	**1E-03**	---	1.80E-05	1.60E-05		**3E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	1.05E+00	N	2.59E-02	---	2.00E+00	**1E-02**	---	2.22E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.10E+00	Y	1.50E-01	---	6.00E+01	**3E-03**	---	1.29E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	8.50E-03	N	2.10E-04	---	9.00E+00	**2E-05**	---	1.80E-05	6.00E-04		**1E-08**
1,2-DICHLOROETHANE	107-06-2	9.00E-01	Y	2.22E-02	---	7.00E+00	**3E-03**	---	1.90E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	4.00E-02	N	9.87E-04	---	4.00E+00	**2E-04**	---	8.46E-05	3.70E-06		**3E-10**
1,3,5-Trimethylbenzene	108-67-8	1.70E+00	Y	4.19E-02	---	6.00E+01	**7E-04**	---	3.59E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.40E-02	N	1.09E-03	---	8.00E+02	**1E-06**	---	9.30E-05	1.10E-05		**1E-09**
BENZENE	71-43-2	2.50E+00	Y	6.17E-02	---	3.00E+01	**2E-03**	---	5.29E-03	7.80E-06		**4E-08**
BENZYL CHLORIDE	100-44-7	7.00E-02	N	1.73E-03	---	1.00E+00	**2E-03**	---	1.48E-04	4.90E-05		**7E-09**
BROMODICHLOROMETHANE	75-27-4	3.00E-01	Y	7.40E-03	---	NA	**---**	---	6.34E-04	3.70E-05		**2E-08**
BROMOMETHANE	74-83-9	1.95E-01	N	4.81E-03	---	5.00E+00	**1E-03**	---	4.12E-04	-		**---**
CARBON TETRACHLORIDE	56-23-5	1.20E+00	Y	2.96E-02	---	1.00E+02	**3E-04**	---	2.54E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	1.40E+00	Y	3.45E-02	---	9.77E+01	**4E-04**	---	2.96E-03	2.30E-05		**7E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	---	---	-		**---**
ETHYLBENZENE	100-41-4	3.60E+00	Y	8.88E-02	---	1.00E+03	**9E-05**	---	7.61E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	2.10E-02	---	NA	**---**	---	1.80E-03	2.20E-05		**4E-08**
ISOPROPYL ALCOHOL	67-63-0	1.20E+02	Y	2.96E+00	---	2.00E+02	**1E-02**	---	2.54E-01	-		**---**
M,P-XYLENE	108-38-3	1.80E+01	Y	4.44E-01	---	1.00E+02	**4E-03**	---	3.81E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	4.80E-01	N	1.18E-02	---	6.00E+02	**2E-05**	---	1.01E-03	1.00E-08	M	**5E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	6.20E+00	Y	1.53E-01	---	1.00E+02	**2E-03**	---	1.31E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.70E-01	Y	1.16E-02	---	4.00E+01	**3E-04**	---	9.94E-04	2.60E-07		**3E-10**
TRICHLOROETHENE	79-01-6	2.00E-02	Y	4.93E-04	---	2.00E+00	**2E-04**	---	4.23E-05	4.10E-06	M	**4E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		**---**
VINYL CHLORIDE	75-01-4	2.75E-03	N	6.78E-05	---	8.00E+01	**8E-07**	---	5.81E-06	4.40E-06	M	**1E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0102H**	**Total Inhalation**	**5E-02**	**0E+00**	**3E-07**
		Based on NDs only	**2E-02**	**0E+00**	**6E-08**
		Based on Detects only	**3E-02**	**All ND**	**2E-07**
		Site-related only	**9E-04**	**0E+00**	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0102H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.80E-01	3.38E-03	2.03E-03	NA	NA	1.0E-08		3E-11	2E-11	---	---	**5E-11**
TRICHLOROETHENE	79-01-6	2.00E-02	1.41E-04	8.46E-05	NA	NA	1.0E-06	kidney	1E-10	8E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	2.00E-02	4.23E-05		NA		3.1E-06	NHL+liver	1E-10		---		**1E-10**
VINYL CHLORIDE	75-01-4	2.75E-03	1.94E-05	1.16E-05	NA	NA	4.4E-06		9E-11	5E-11	---	---	**1E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0118H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00E-01	N	2.47E-03	---	NA	**---**	**---**	2.11E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	4.50E-01	N	1.11E-02	---	2.00E+00	**6E-03**	**---**	9.51E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	1.20E-01	Y	2.96E-03	---	3.00E+01	**1E-04**	**---**	2.54E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	9.50E-02	N	2.34E-03	---	2.00E-01	**1E-02**	**---**	2.01E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	3.05E+00	N	7.52E-02	---	2.00E+00	**4E-02**	**---**	6.45E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.70E-01	Y	1.16E-02	---	6.00E+01	**2E-04**	**---**	9.94E-04	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.30E-01	N	8.14E-03	---	9.00E+00	**9E-04**	**---**	6.98E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	7.80E-02	Y	1.92E-03	---	7.00E+00	**3E-04**	**---**	1.65E-04	2.60E-05		**4E-09**
1,2-DICHLOROPROPANE	78-87-5	4.70E-01	N	1.16E-02	---	4.00E+00	**3E-03**	**---**	9.94E-04	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	5.50E-01	N	1.36E-02	---	6.00E+01	**2E-04**	**---**	1.16E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	3.70E-01	N	9.13E-03	---	8.00E+02	**1E-05**	**---**	7.82E-04	1.10E-05		**9E-09**
BENZENE	71-43-2	7.30E-01	Y	1.80E-02	---	3.00E+01	**6E-04**	**---**	1.54E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	1.10E+00	N	2.71E-02	---	1.00E+00	**3E-02**	**---**	2.33E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	1.15E+00	N	2.84E-02	---	NA	**---**	**---**	2.43E-03	3.70E-05		**9E-08**
BROMOMETHANE	74-83-9	3.75E+00	N	9.25E-02	---	5.00E+00	**2E-02**	**---**	7.93E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	1.11E-02	---	1.00E+02	**1E-04**	**---**	9.51E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	2.20E+00	Y	5.43E-02	---	9.77E+01	**6E-04**	**---**	4.65E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	9.00E+00	Y	2.22E-01	---	7.00E+01	**3E-03**	**---**	1.90E-02	-		**---**
ETHYLBENZENE	100-41-4	3.90E-01	Y	9.62E-03	---	1.00E+03	**1E-05**	**---**	8.25E-04	2.50E-06		**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.70E+00	N	9.13E-02	---	NA	**---**	**---**	7.82E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	1.40E+01	Y	3.45E-01	---	2.00E+02	**2E-03**	**---**	2.96E-02	-		**---**
M,P-XYLENE	108-38-3	1.70E+00	Y	4.19E-02	---	1.00E+02	**4E-04**	**---**	3.59E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	5.00E+02	Y	1.23E+01	---	6.00E+02	**2E-02**	**---**	1.06E+00	1.00E-08	M	**6E-08**
NAPHTHALENE	91-20-3	2.75E-02	N	6.78E-04	---	3.00E+00	**2E-04**	**---**	5.81E-05	3.40E-05		**2E-09**
O-XYLENE	95-47-6	5.40E-01	Y	1.33E-02	---	1.00E+02	**1E-04**	**---**	1.14E-03	-		**---**
TETRACHLOROETHENE	127-18-4	4.90E+00	Y	1.21E-01	---	4.00E+01	**3E-03**	**---**	1.04E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	3.10E-02	Y	7.65E-04	---	2.00E+00	**4E-04**	**---**	6.55E-05	4.10E-06	M	**6E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	3.00E-02	N	7.40E-04	---	8.00E+01	**9E-06**	**---**	6.34E-05	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0118H**	**Total Inhalation**	**1E-01**	**0E+00**	**1E-06**
		Based on NDs only	**1E-01**	**0E+00**	**9E-07**
		Based on Detects only	**3E-02**	**All ND**	**2E-07**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0118H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.00E+02	3.52E+00	2.11E+00	NA	NA	1.0E-08		4E-08	2E-08	---	---	**6E-08**
TRICHLOROETHENE	79-01-6	3.10E-02	2.18E-04	1.31E-04	NA	NA	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	3.10E-02	6.55E-05		NA		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	3.00E-02	2.11E-04	1.27E-04	NA	NA	4.4E-06		9E-10	6E-10	---	---	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0121H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.90E-02	N	7.15E-04	---	NA	---	---	6.13E-05	5.80E-05		**4E-09**
1,3-BUTADIENE	106-99-0	9.00E-02	N	2.22E-03	---	2.00E+00	**1E-03**	---	1.90E-04	3.00E-05		**6E-09**
1,4-DIOXANE	123-91-1	2.00E-01	Y	4.93E-03	---	3.00E+01	**2E-04**	---	4.23E-04	5.00E-06		**2E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.90E-02	N	4.69E-04	---	2.00E-01	**2E-03**	---	4.02E-05	1.60E-05		**6E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	1.73E-02	---	2.00E+00	**9E-03**	---	1.48E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.35E-01	N	3.33E-03	---	6.00E+01	**6E-05**	---	2.85E-04	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	1.73E-03	---	9.00E+00	**2E-04**	---	1.48E-04	6.00E-04		**9E-08**
1,2-DICHLOROETHANE	107-06-2	1.00E-01	Y	2.47E-03	---	7.00E+00	**4E-04**	---	2.11E-04	2.60E-05		**5E-09**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	2.34E-03	---	4.00E+00	**6E-04**	---	2.01E-04	3.70E-06		**7E-10**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	2.84E-03	---	6.00E+01	**5E-05**	---	2.43E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.10E-02	Y	1.50E-03	---	8.00E+02	**2E-06**	---	1.29E-04	1.10E-05		**1E-09**
BENZENE	71-43-2	7.30E-01	Y	1.80E-02	---	3.00E+01	**6E-04**	---	1.54E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	2.30E-01	N	5.67E-03	---	1.00E+00	**6E-03**	---	4.86E-04	4.90E-05		**2E-08**
BROMODICHLOROMETHANE	75-27-4	2.40E-01	Y	5.92E-03	---	NA	**---**	---	5.07E-04	3.70E-05		**2E-08**
BROMOMETHANE	74-83-9	7.50E-01	N	1.85E-02	---	5.00E+00	**4E-03**	---	1.59E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	1.11E-02	---	1.00E+02	**1E-04**	---	9.51E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	9.80E-01	Y	2.42E-02	---	9.77E+01	**2E-04**	---	2.07E-03	2.30E-05		**5E-08**
ETHYL ACETATE	141-78-6	2.10E+00	Y	5.18E-02	---	7.00E+01	**7E-04**	---	4.44E-03	-		**---**
ETHYLBENZENE	100-41-4	3.20E-01	Y	7.89E-03	---	1.00E+03	**8E-06**	---	6.77E-04	2.50E-06		**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	1.85E-02	---	NA	**---**	---	1.59E-03	2.20E-05		**3E-08**
ISOPROPYL ALCOHOL	67-63-0	5.90E+01	Y	1.46E+00	---	2.00E+02	**7E-03**	---	1.25E-01	-		**---**
M,P-XYLENE	108-38-3	1.30E+00	Y	3.21E-02	---	1.00E+02	**3E-04**	---	2.75E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	5.50E-01	N	1.36E-02	---	6.00E+02	**2E-05**	---	1.16E-03	1.00E-08	M	**6E-11**
NAPHTHALENE	91-20-3	1.50E-01	Y	3.70E-03	---	3.00E+00	**1E-03**	---	3.17E-04	3.40E-05		**1E-08**
O-XYLENE	95-47-6	3.90E-01	Y	9.62E-03	---	1.00E+02	**1E-04**	---	8.25E-04	-		**---**
TETRACHLOROETHENE	127-18-4	3.90E+00	Y	9.62E-02	---	4.00E+01	**2E-03**	---	8.25E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	5.90E-02	Y	1.46E-03	---	2.00E+00	**7E-04**	---	1.25E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		**---**
VINYL CHLORIDE	75-01-4	5.30E-02	Y	1.31E-03	---	8.00E+01	**2E-05**	---	1.12E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0121H**	**Total Inhalation**	**4E-02**	**0E+00**	**3E-07**
		Based on NDs only	**2E-02**	**0E+00**	**2E-07**
		Based on Detects only	**1E-02**	**All ND**	**1E-07**
		Site-related only	**3E-03**	**0E+00**	**8E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0121H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.50E-01	3.88E-03	2.33E-03	NA	NA	1.0E-08		4E-11	2E-11	---	---	**6E-11**
TRICHLOROETHENE	79-01-6	5.90E-02	4.16E-04	2.49E-04	NA	NA	1.0E-06	kidney	4E-10	2E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	5.90E-02	1.25E-04		NA		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	5.30E-02	3.74E-04	2.24E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0122H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult		CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A	TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00E-02	N	4.93E-04	---	NA	**---**	**---**	4.23E-05	5.80E-05		**2E-09**
1,3-BUTADIENE	106-99-0	2.30E-01	Y	5.67E-03	---	2.00E+00	**3E-03**	**---**	4.86E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	1.70E-01	Y	4.19E-03	---	3.00E+01	**1E-04**	**---**	3.59E-04	5.00E-06		**2E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.90E-02	N	4.69E-04	---	2.00E-01	**2E-03**	**---**	4.02E-05	1.60E-05		**6E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	1.48E-02	---	2.00E+00	**7E-03**	**---**	1.27E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.20E-01	Y	1.53E-02	---	6.00E+01	**3E-04**	**---**	1.31E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.50E-02	N	1.60E-03	---	9.00E+00	**2E-04**	**---**	1.37E-04	6.00E-04		**8E-08**
1,2-DICHLOROETHANE	107-06-2	8.60E-02	Y	2.12E-03	---	7.00E+00	**3E-04**	**---**	1.82E-04	2.60E-05		**5E-09**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	2.34E-03	---	4.00E+00	**6E-04**	**---**	2.01E-04	3.70E-06		**7E-10**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	2.84E-03	---	6.00E+01	**5E-05**	**---**	2.43E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	7.20E-02	Y	1.78E-03	---	8.00E+02	**2E-06**	**---**	1.52E-04	1.10E-05		**2E-09**
BENZENE	71-43-2	5.80E-01	Y	1.43E-02	---	3.00E+01	**5E-04**	**---**	1.23E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	2.25E-01	N	5.55E-03	---	1.00E+00	**6E-03**	**---**	4.76E-04	4.90E-05		**2E-08**
BROMODICHLOROMETHANE	75-27-4	2.30E-01	N	5.67E-03	---	NA	**---**	**---**	4.86E-04	3.70E-05		**2E-08**
BROMOMETHANE	74-83-9	7.50E-01	N	1.85E-02	---	5.00E+00	**4E-03**	**---**	1.59E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	1.18E-02	---	1.00E+02	**1E-04**	**---**	1.01E-03	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	7.40E-01	Y	1.83E-02	---	9.77E+01	**2E-04**	**---**	1.56E-03	2.30E-05		**4E-08**
ETHYL ACETATE	141-78-6	6.30E+00	Y	1.55E-01	---	7.00E+01	**2E-03**	**---**	1.33E-02	-		**---**
ETHYLBENZENE	100-41-4	2.30E-01	Y	5.67E-03	---	1.00E+03	**6E-06**	**---**	4.86E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	1.85E-02	---	NA	**---**	**---**	1.59E-03	2.20E-05		**3E-08**
ISOPROPYL ALCOHOL	67-63-0	2.10E+01	Y	5.18E-01	---	2.00E+02	**3E-03**	**---**	4.44E-02	-		**---**
M,P-XYLENE	108-38-3	8.10E-01	Y	2.00E-02	---	1.00E+02	**2E-04**	**---**	1.71E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	7.00E-01	Y	1.73E-02	---	6.00E+02	**3E-05**	**---**	1.48E-03	1.00E-08	M	**8E-11**
NAPHTHALENE	91-20-3	2.80E-02	N	6.91E-04	---	3.00E+00	**2E-04**	**---**	5.92E-05	3.40E-05		**2E-09**
O-XYLENE	95-47-6	3.10E-01	Y	7.65E-03	---	1.00E+02	**8E-05**	**---**	6.55E-04	-		**---**
TETRACHLOROETHENE	127-18-4	4.80E+00	Y	1.18E-01	---	4.00E+01	**3E-03**	**---**	1.01E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	2.20E-02	Y	5.43E-04	---	2.00E+00	**3E-04**	**---**	4.65E-05	4.10E-06	M	**4E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.00E-03	N	1.48E-04	---	8.00E+01	**2E-06**	**---**	1.27E-05	4.40E-06	M	**3E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0122H**	**Total Inhalation**	**3E-02**	**0E+00**	**2E-07**
		Based on NDs only	**2E-02**	**0E+00**	**2E-07**
		Based on Detects only	**1E-02**	**All ND**	**8E-08**
		Site-related only	**3E-03**	**0E+00**	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0122H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.00E-01	4.93E-03	2.96E-03	NA	NA	1.0E-08		5E-11	3E-11	---	---	**8E-11**
TRICHLOROETHENE	79-01-6	2.20E-02	1.55E-04	9.30E-05	NA	NA	1.0E-06	kidney	2E-10	9E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	2.20E-02	4.65E-05		NA		3.1E-06	NHL+liver	1E-10		---		**1E-10**
VINYL CHLORIDE	75-01-4	6.00E-03	4.23E-05	2.54E-05	NA	NA	4.4E-06		2E-10	1E-10	---	---	**3E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0133H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	5.30E-04	---	NA	**---**	**---**	4.55E-05	5.80E-05		**3E-09**
1,3-BUTADIENE	106-99-0	9.50E-02	N	2.34E-03	---	2.00E+00	**1E-03**	**---**	2.01E-04	3.00E-05		**6E-09**
1,4-DIOXANE	123-91-1	1.50E-01	Y	3.70E-03	---	3.00E+01	**1E-04**	**---**	3.17E-04	5.00E-06		**2E-09**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	4.93E-04	---	2.00E-01	**2E-03**	**---**	4.23E-05	1.60E-05		**7E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	1.60E-02	---	2.00E+00	**8E-03**	**---**	1.37E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.00E-01	Y	1.23E-02	---	6.00E+01	**2E-04**	**---**	1.06E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	1.73E-03	---	9.00E+00	**2E-04**	**---**	1.48E-04	6.00E-04		**9E-08**
1,2-DICHLOROETHANE	107-06-2	2.50E-01	Y	6.17E-03	---	7.00E+00	**9E-04**	**---**	5.29E-04	2.60E-05		**1E-08**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	2.47E-03	---	4.00E+00	**6E-04**	**---**	2.11E-04	3.70E-06		**8E-10**
1,3,5-Trimethylbenzene	108-67-8	1.25E-01	N	3.08E-03	---	6.00E+01	**5E-05**	**---**	2.64E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	2.80E-02	Y	6.91E-04	---	8.00E+02	**9E-07**	**---**	5.92E-05	1.10E-05		**7E-10**
BENZENE	71-43-2	9.70E-01	Y	2.39E-02	---	3.00E+01	**8E-04**	**---**	2.05E-03	7.80E-06		**2E-08**
BENZYL CHLORIDE	100-44-7	2.40E-01	N	5.92E-03	---	1.00E+00	**6E-03**	**---**	5.07E-04	4.90E-05		**2E-08**
BROMODICHLOROMETHANE	75-27-4	1.10E+00	Y	2.71E-02	---	NA	**---**	**---**	2.33E-03	3.70E-05		**9E-08**
BROMOMETHANE	74-83-9	8.00E-01	N	1.97E-02	---	5.00E+00	**4E-03**	**---**	1.69E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	1.18E-02	---	1.00E+02	**1E-04**	**---**	1.01E-03	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	4.70E+00	Y	1.16E-01	---	9.77E+01	**1E-03**	**---**	9.94E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	7.20E+00	Y	1.78E-01	---	7.00E+01	**3E-03**	**---**	1.52E-02	-		**---**
ETHYLBENZENE	100-41-4	3.50E-01	Y	8.63E-03	---	1.00E+03	**9E-06**	**---**	7.40E-04	2.50E-06		**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	1.97E-02	---	NA	**---**	**---**	1.69E-03	2.20E-05		**4E-08**
ISOPROPYL ALCOHOL	67-63-0	2.50E+01	Y	6.17E-01	---	2.00E+02	**3E-03**	**---**	5.29E-02	-		**---**
M,P-XYLENE	108-38-3	1.10E+00	Y	2.71E-02	---	1.00E+02	**3E-04**	**---**	2.33E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	8.40E-01	Y	2.07E-02	---	6.00E+02	**3E-05**	**---**	1.78E-03	1.00E-08	M	**9E-11**
NAPHTHALENE	91-20-3	2.65E-02	N	6.54E-04	---	3.00E+00	**2E-04**	**---**	5.60E-05	3.40E-05		**2E-09**
O-XYLENE	95-47-6	4.80E-01	Y	1.18E-02	---	1.00E+02	**1E-04**	**---**	1.01E-03	-		**---**
TETRACHLOROETHENE	127-18-4	3.90E-01	Y	9.62E-03	---	4.00E+01	**2E-04**	**---**	8.25E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.40E-02	Y	5.92E-04	---	2.00E+00	**3E-04**	**---**	5.07E-05	4.10E-06	M	**4E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-03	N	1.60E-04	---	8.00E+01	**2E-06**	**---**	1.37E-05	4.40E-06	M	**3E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0133H**	**Total Inhalation**	**3E-02**	**0E+00**	**5E-07**
		Based on NDs only	**2E-02**	**0E+00**	**2E-07**
		Based on Detects only	**1E-02**	**All ND**	**4E-07**
		Site-related only	**7E-04**	**0E+00**	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0133H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.40E-01	5.92E-03	3.55E-03	NA	NA	1.0E-08		6E-11	4E-11	---	---	**9E-11**
TRICHLOROETHENE	79-01-6	2.40E-02	1.69E-04	1.01E-04	NA	NA	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	2.40E-02	5.07E-05		NA		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	6.50E-03	4.58E-05	2.75E-05	NA	NA	4.4E-06		2E-10	1E-10	---	---	**3E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0135H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	4.05E-02	N	9.99E-04	---	NA	**---**	**---**	8.56E-05	5.80E-05		**5E-09**
1,3-BUTADIENE	106-99-0	1.80E-01	N	4.44E-03	---	2.00E+00	**2E-03**	**---**	3.81E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	1.10E-01	N	2.71E-03	---	3.00E+01	**9E-05**	**---**	2.33E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	3.75E-02	N	9.25E-04	---	2.00E-01	**5E-03**	**---**	7.93E-05	1.60E-05		**1E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	1.20E+00	N	2.96E-02	---	2.00E+00	**1E-02**	**---**	2.54E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	7.60E-01	Y	1.87E-02	---	6.00E+01	**3E-04**	**---**	1.61E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	1.35E-01	N	3.33E-03	---	9.00E+00	**4E-04**	**---**	2.85E-04	6.00E-04		**2E-07**
1,2-DICHLOROETHANE	107-06-2	1.60E-01	Y	3.95E-03	---	7.00E+00	**6E-04**	**---**	3.38E-04	2.60E-05		**9E-09**
1,2-DICHLOROPROPANE	78-87-5	1.90E-01	N	4.69E-03	---	4.00E+00	**1E-03**	**---**	4.02E-04	3.70E-06		**1E-09**
1,3,5-Trimethylbenzene	108-67-8	2.30E-01	N	5.67E-03	---	6.00E+01	**9E-05**	**---**	4.86E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	3.00E-02	Y	7.40E-04	---	8.00E+02	**9E-07**	**---**	6.34E-05	1.10E-05		**7E-10**
BENZENE	71-43-2	7.10E-01	Y	1.75E-02	---	3.00E+01	**6E-04**	**---**	1.50E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	4.50E-01	N	1.11E-02	---	1.00E+00	**1E-02**	**---**	9.51E-04	4.90E-05		**5E-08**
BROMODICHLOROMETHANE	75-27-4	4.60E-01	N	1.13E-02	---	NA	**---**	**---**	9.73E-04	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	1.50E+00	N	3.70E-02	---	5.00E+00	**7E-03**	**---**	3.17E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.00E-01	Y	1.23E-02	---	1.00E+02	**1E-04**	**---**	1.06E-03	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	1.70E+00	Y	4.19E-02	---	9.77E+01	**4E-04**	**---**	3.59E-03	2.30E-05		**8E-08**
ETHYL ACETATE	141-78-6	1.80E+01	Y	4.44E-01	---	7.00E+01	**6E-03**	**---**	3.81E-02	-		**---**
ETHYLBENZENE	100-41-4	1.20E+01	Y	2.96E-01	---	1.00E+03	**3E-04**	**---**	2.54E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.50E+00	N	3.70E-02	---	NA	**---**	**---**	3.17E-03	2.20E-05		**7E-08**
ISOPROPYL ALCOHOL	67-63-0	1.40E+01	Y	3.45E-01	---	2.00E+02	**2E-03**	**---**	2.96E-02	-		**---**
M,P-XYLENE	108-38-3	4.10E+01	Y	1.01E+00	---	1.00E+02	**1E-02**	**---**	8.67E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	6.00E-01	N	1.48E-02	---	6.00E+02	**2E-05**	**---**	1.27E-03	1.00E-08	M	**7E-11**
NAPHTHALENE	91-20-3	1.60E-01	Y	3.95E-03	---	3.00E+00	**1E-03**	**---**	3.38E-04	3.40E-05		**1E-08**
O-XYLENE	95-47-6	1.20E+01	Y	2.96E-01	---	1.00E+02	**3E-03**	**---**	2.54E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.50E-01	Y	1.11E-02	---	4.00E+01	**3E-04**	**---**	9.51E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	5.50E-02	N	1.36E-03	---	2.00E+00	**7E-04**	**---**	1.16E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	1.20E-02	N	2.96E-04	---	8.00E+01	**4E-06**	**---**	2.54E-05	4.40E-06	M	**6E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0135H**	**Total Inhalation**	**7E-02**	**0E+00**	**5E-07**
		Based on NDs only	**4E-02**	**0E+00**	**3E-07**
		Based on Detects only	**3E-02**	**All ND**	**2E-07**
		Site-related only	**1E-03**	**0E+00**	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0135H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.00E-01	4.23E-03	2.54E-03	NA	NA	1.0E-08		4E-11	3E-11	---	---	**7E-11**
TRICHLOROETHENE	79-01-6	5.50E-02	3.88E-04	2.33E-04	NA	NA	1.0E-06	kidney	4E-10	2E-10	---	---	**6E-10**
TRICHLOROETHENE	79-01-6	5.50E-02	1.16E-04		NA		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	1.20E-02	8.46E-05	5.07E-05	NA	NA	4.4E-06		4E-10	2E-10	---	---	**6E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0137H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	5.30E-04	---	NA	---	---	4.55E-05	5.80E-05		**3E-09**
1,3-BUTADIENE	106-99-0	9.50E-02	N	2.34E-03	---	2.00E+00	**1E-03**	---	2.01E-04	3.00E-05		**6E-09**
1,4-DIOXANE	123-91-1	1.80E-01	Y	4.44E-03	---	3.00E+01	**1E-04**	---	3.81E-04	5.00E-06		**2E-09**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	4.93E-04	---	2.00E-01	**2E-03**	---	4.23E-05	1.60E-05		**7E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	1.60E-02	---	2.00E+00	**8E-03**	---	1.37E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.10E+00	Y	2.71E-02	---	6.00E+01	**5E-04**	---	2.33E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	1.73E-03	---	9.00E+00	**2E-04**	---	1.48E-04	6.00E-04		**9E-08**
1,2-DICHLOROETHANE	107-06-2	9.30E-02	Y	2.29E-03	---	7.00E+00	**3E-04**	---	1.97E-04	2.60E-05		**5E-09**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	2.47E-03	---	4.00E+00	**6E-04**	---	2.11E-04	3.70E-06		**8E-10**
1,3,5-Trimethylbenzene	108-67-8	2.50E-01	Y	6.17E-03	---	6.00E+01	**1E-04**	---	5.29E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	1.97E-03	---	8.00E+02	**2E-06**	---	1.69E-04	1.10E-05		**2E-09**
BENZENE	71-43-2	3.30E+00	Y	8.14E-02	---	3.00E+01	**3E-03**	---	6.98E-03	7.80E-06		**5E-08**
BENZYL CHLORIDE	100-44-7	2.40E-01	N	5.92E-03	---	1.00E+00	**6E-03**	---	5.07E-04	4.90E-05		**2E-08**
BROMODICHLOROMETHANE	75-27-4	2.45E-01	N	6.04E-03	---	NA	---	---	5.18E-04	3.70E-05		**2E-08**
BROMOMETHANE	74-83-9	8.00E-01	N	1.97E-02	---	5.00E+00	**4E-03**	---	1.69E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	1.18E-02	---	1.00E+02	**1E-04**	---	1.01E-03	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	1.50E+00	Y	3.70E-02	---	9.77E+01	**4E-04**	---	3.17E-03	2.30E-05		**7E-08**
ETHYL ACETATE	141-78-6	5.20E+00	Y	1.28E-01	---	7.00E+01	**2E-03**	---	1.10E-02	-		---
ETHYLBENZENE	100-41-4	1.80E+00	Y	4.44E-02	---	1.00E+03	**4E-05**	---	3.81E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	1.97E-02	---	NA	---	---	1.69E-03	2.20E-05		**4E-08**
ISOPROPYL ALCOHOL	67-63-0	4.80E+00	Y	1.18E-01	---	2.00E+02	**6E-04**	---	1.01E-02	-		---
M,P-XYLENE	108-38-3	8.80E+00	Y	2.17E-01	---	1.00E+02	**2E-03**	---	1.86E-02	-		---
METHYLENE CHLORIDE	75-09-2	9.40E-01	Y	2.32E-02	---	6.00E+02	**4E-05**	---	1.99E-03	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	2.80E-02	N	6.91E-04	---	3.00E+00	**2E-04**	---	5.92E-05	3.40E-05		**2E-09**
O-XYLENE	95-47-6	2.30E+00	Y	5.67E-02	---	1.00E+02	**6E-04**	---	4.86E-03	-		---
TETRACHLOROETHENE	127-18-4	1.20E+00	Y	2.96E-02	---	4.00E+01	**7E-04**	---	2.54E-03	2.60E-07		**7E-10**
TRICHLOROETHENE	79-01-6	1.30E-01	Y	3.21E-03	---	2.00E+00	**2E-03**	---	2.75E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	1.30E-02	Y	3.21E-04	---	8.00E+01	**4E-06**	---	2.75E-05	4.40E-06	M	**6E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0137H**	**Total Inhalation**	**3E-02**	**0E+00**	**3E-07**
		Based on NDs only	**2E-02**	**0E+00**	**2E-07**
		Based on Detects only	**1E-02**	**All ND**	**2E-07**
		Site-related only	**2E-03**	**0E+00**	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0137H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.40E-01	6.62E-03	3.97E-03	NA	NA	1.0E-08		7E-11	4E-11	---	---	**1E-10**
TRICHLOROETHENE	79-01-6	1.30E-01	9.16E-04	5.50E-04	NA	NA	1.0E-06	kidney	9E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	1.30E-01	2.75E-04		NA		3.1E-06	NHL+liver	9E-10		---		**9E-10**
VINYL CHLORIDE	75-01-4	1.30E-02	9.16E-05	5.50E-05	NA	NA	4.4E-06		4E-10	2E-10	---	---	**6E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0139H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.30E-02	N	5.67E-04	---	NA	---	---	4.86E-05	5.80E-05		**3E-09**
1,3-BUTADIENE	106-99-0	1.30E+00	Y	3.21E-02	---	2.00E+00	**2E-02**	---	2.75E-03	3.00E-05		**8E-08**
1,4-DIOXANE	123-91-1	2.20E-01	Y	5.43E-03	---	3.00E+01	**2E-04**	---	4.65E-04	5.00E-06		**2E-09**
1,1,2-TRICHLOROETHANE	79-00-5	2.15E-02	N	5.30E-04	---	2.00E-01	**3E-03**	---	4.55E-05	1.60E-05		**7E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	1.73E-02	---	2.00E+00	**9E-03**	---	1.48E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.40E-01	Y	1.09E-02	---	6.00E+01	**2E-04**	---	9.30E-04	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	1.85E-03	---	9.00E+00	**2E-04**	---	1.59E-04	6.00E-04		**1E-07**
1,2-DICHLOROETHANE	107-06-2	4.90E-01	Y	1.21E-02	---	7.00E+00	**2E-03**	---	1.04E-03	2.60E-05		**3E-08**
1,2-DICHLOROPROPANE	78-87-5	1.10E-01	N	2.71E-03	---	4.00E+00	**7E-04**	---	2.33E-04	3.70E-06		**9E-10**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	3.21E-03	---	6.00E+01	**5E-05**	---	2.75E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.60E+01	Y	1.38E+00	---	8.00E+02	**2E-03**	---	1.18E-01	1.10E-05		**1E-06**
BENZENE	71-43-2	1.90E+00	Y	4.69E-02	---	3.00E+01	**2E-03**	---	4.02E-03	7.80E-06		**3E-08**
BENZYL CHLORIDE	100-44-7	2.60E-01	N	6.41E-03	---	1.00E+00	**6E-03**	---	5.50E-04	4.90E-05		**3E-08**
BROMODICHLOROMETHANE	75-27-4	2.60E-01	N	6.41E-03	---	NA	---	---	5.50E-04	3.70E-05		**2E-08**
BROMOMETHANE	74-83-9	1.90E+00	Y	4.69E-02	---	5.00E+00	**9E-03**	---	4.02E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	1.09E-02	---	1.00E+02	**1E-04**	---	9.30E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	1.00E+00	Y	2.47E-02	---	9.77E+01	**3E-04**	---	2.11E-03	2.30E-05		**5E-08**
ETHYL ACETATE	141-78-6	1.10E+01	Y	2.71E-01	---	7.00E+01	**4E-03**	---	2.33E-02	-		**---**
ETHYLBENZENE	100-41-4	5.30E-01	Y	1.31E-02	---	1.00E+03	**1E-05**	---	1.12E-03	2.50E-06		**3E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	2.10E-02	---	NA	---	---	1.80E-03	2.20E-05		**4E-08**
ISOPROPYL ALCOHOL	67-63-0	3.60E+02	Y	8.88E+00	---	2.00E+02	**4E-02**	---	7.61E-01	-		**---**
M,P-XYLENE	108-38-3	1.70E+00	Y	4.19E-02	---	1.00E+02	**4E-04**	---	3.59E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	3.45E-01	N	8.51E-03	---	6.00E+02	**1E-05**	---	7.29E-04	1.00E-08	M	**4E-11**
NAPHTHALENE	91-20-3	3.05E-02	N	7.52E-04	---	3.00E+00	**3E-04**	---	6.45E-05	3.40E-05		**2E-09**
O-XYLENE	95-47-6	4.40E-01	Y	1.09E-02	---	1.00E+02	**1E-04**	---	9.30E-04	-		**---**
TETRACHLOROETHENE	127-18-4	1.50E-01	Y	3.70E-03	---	4.00E+01	**9E-05**	---	3.17E-04	2.60E-07		**8E-11**
TRICHLOROETHENE	79-01-6	5.00E-02	N	1.23E-03	---	2.00E+00	**6E-04**	---	1.06E-04	4.10E-06	M	**9E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		**---**
VINYL CHLORIDE	75-01-4	7.00E-03	N	1.73E-04	---	8.00E+01	**2E-06**	---	1.48E-05	4.40E-06	M	**3E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0139H**	**Total Inhalation**	**1E-01**	**0E+00**	**2E-06**
		Based on NDs only	**2E-02**	**0E+00**	**2E-07**
		Based on Detects only	**8E-02**	**All ND**	**2E-06**
		Site-related only	**9E-04**	**0E+00**	**4E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0139H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.45E-01	2.43E-03	1.46E-03	NA	NA	1.0E-08		2E-11	1E-11	---	---	**4E-11**
TRICHLOROETHENE	79-01-6	5.00E-02	3.52E-04	2.11E-04	NA	NA	1.0E-06	kidney	4E-10	2E-10	---	---	**6E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	1.06E-04		NA		3.1E-06	NHL+liver	3E-10		---		**3E-10**
VINYL CHLORIDE	75-01-4	7.00E-03	4.93E-05	2.96E-05	NA	NA	4.4E-06		2E-10	1E-10	---	---	**3E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0145H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	2.71E-04	---	NA	---	---	2.33E-05	5.80E-05		**1E-09**
1,3-BUTADIENE	106-99-0	5.00E-02	N	1.23E-03	---	2.00E+00	**6E-04**	---	1.06E-04	3.00E-05		**3E-09**
1,4-DIOXANE	123-91-1	7.50E-02	N	1.85E-03	---	3.00E+01	**6E-05**	---	1.59E-04	5.00E-06		**8E-10**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	1.73E-04	---	2.00E-01	**9E-04**	---	1.48E-05	1.60E-05		**2E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	4.90E-01	N	1.21E-02	---	2.00E+00	**6E-03**	---	1.04E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.50E-01	Y	3.70E-03	---	6.00E+01	**6E-05**	---	3.17E-04	-		---
1,2-DIBROMOETHANE	106-93-4	3.35E-02	N	8.26E-04	---	9.00E+00	**9E-05**	---	7.08E-05	6.00E-04		**4E-08**
1,2-DICHLOROETHANE	107-06-2	8.30E-02	Y	2.05E-03	---	7.00E+00	**3E-04**	---	1.75E-04	2.60E-05		**5E-09**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	2.34E-03	---	4.00E+00	**6E-04**	---	2.01E-04	3.70E-06		**7E-10**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	1.48E-03	---	6.00E+01	**2E-05**	---	1.27E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	2.80E+00	Y	6.91E-02	---	8.00E+02	**9E-05**	---	5.92E-03	1.10E-05		**7E-08**
BENZENE	71-43-2	4.10E-01	Y	1.01E-02	---	3.00E+01	**3E-04**	---	8.67E-04	7.80E-06		**7E-09**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	2.10E-03	---	1.00E+00	**2E-03**	---	1.80E-04	4.90E-05		**9E-09**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	3.21E-03	---	NA	---	---	2.75E-04	3.70E-05		**1E-08**
BROMOMETHANE	74-83-9	6.50E-01	N	1.60E-02	---	5.00E+00	**3E-03**	---	1.37E-03	-		---
CARBON TETRACHLORIDE	56-23-5	7.60E-01	Y	1.87E-02	---	1.00E+02	**2E-04**	---	1.61E-03	6.00E-06		**1E-08**
CHLOROFORM	67-66-3	3.90E-01	Y	9.62E-03	---	9.77E+01	**1E-04**	---	8.25E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.30E-01	Y	3.21E-03	---	1.00E+03	**3E-06**	---	2.75E-04	2.50E-06		**7E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	1.60E-02	---	NA	---	---	1.37E-03	2.20E-05		**3E-08**
ISOPROPYL ALCOHOL	67-63-0	1.50E+01	Y	3.70E-01	---	2.00E+02	**2E-03**	---	3.17E-02	-		---
M,P-XYLENE	108-38-3	4.10E-01	Y	1.01E-02	---	1.00E+02	**1E-04**	---	8.67E-04	-		---
METHYLENE CHLORIDE	75-09-2	4.30E+00	Y	1.06E-01	---	6.00E+02	**2E-04**	---	9.09E-03	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.50E-01	Y	3.70E-03	---	1.00E+02	**4E-05**	---	3.17E-04	-		---
TETRACHLOROETHENE	127-18-4	4.70E+00	Y	1.16E-01	---	4.00E+01	**3E-03**	---	9.94E-03	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	4.50E-02	Y	1.11E-03	---	2.00E+00	**6E-04**	---	9.51E-05	4.10E-06	M	**8E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.00E-03	N	1.97E-04	---	8.00E+01	**2E-06**	---	1.69E-05	4.40E-06	M	**4E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0145H**	**Total Inhalation**	**2E-02**	**0E+00**	**2E-07**
		Based on NDs only	**1E-02**	**0E+00**	**1E-07**
		Based on Detects only	**7E-03**	**All ND**	**1E-07**
		Site-related only	**4E-03**	**0E+00**	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0145H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.30E+00	3.03E-02	1.82E-02	NA	NA	1.0E-08		3E-10	2E-10	---	---	**5E-10**
TRICHLOROETHENE	79-01-6	4.50E-02	3.17E-04	1.90E-04	NA	NA	1.0E-06	kidney	3E-10	2E-10	---	---	**5E-10**
TRICHLOROETHENE	79-01-6	4.50E-02	9.51E-05		NA		3.1E-06	NHL+liver	3E-10		---		**3E-10**
VINYL CHLORIDE	75-01-4	8.00E-03	5.64E-05	3.38E-05	NA	NA	4.4E-06		2E-10	1E-10	---	---	**4E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0146H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.25E-02	N	5.55E-04	---	NA	---	---	4.76E-05	5.80E-05		**3E-09**
1,3-BUTADIENE	106-99-0	1.00E-01	N	2.47E-03	---	2.00E+00	**1E-03**	---	2.11E-04	3.00E-05		**6E-09**
1,4-DIOXANE	123-91-1	2.30E-01	Y	5.67E-03	---	3.00E+01	**2E-04**	---	4.86E-04	5.00E-06		**2E-09**
1,1,2-TRICHLOROETHANE	79-00-5	2.10E-02	N	5.18E-04	---	2.00E-01	**3E-03**	---	4.44E-05	1.60E-05		**7E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	1.00E+00	N	2.47E-02	---	2.00E+00	**1E-02**	---	2.11E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.45E-01	N	3.58E-03	---	6.00E+01	**6E-05**	---	3.07E-04	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	1.85E-03	---	9.00E+00	**2E-04**	---	1.59E-04	6.00E-04		**1E-07**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	3.45E-03	---	7.00E+00	**5E-04**	---	2.96E-04	2.60E-05		**8E-09**
1,2-DICHLOROPROPANE	78-87-5	1.90E-01	N	4.69E-03	---	4.00E+00	**1E-03**	---	4.02E-04	3.70E-06		**1E-09**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	3.21E-03	---	6.00E+01	**5E-05**	---	2.75E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.05E-01	N	2.59E-03	---	8.00E+02	**3E-06**	---	2.22E-04	1.10E-05		**2E-09**
BENZENE	71-43-2	6.80E-01	Y	1.68E-02	---	3.00E+01	**6E-04**	---	1.44E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	2.50E-01	N	6.17E-03	---	1.00E+00	**6E-03**	---	5.29E-04	4.90E-05		**3E-08**
BROMODICHLOROMETHANE	75-27-4	2.60E-01	N	6.41E-03	---	NA	**---**	---	5.50E-04	3.70E-05		**2E-08**
BROMOMETHANE	74-83-9	1.35E+00	N	3.33E-02	---	5.00E+00	**7E-03**	---	2.85E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	6.40E-01	Y	1.58E-02	---	1.00E+02	**2E-04**	---	1.35E-03	6.00E-06		**8E-09**
CHLOROFORM	67-66-3	1.30E+00	Y	3.21E-02	---	9.77E+01	**3E-04**	---	2.75E-03	2.30E-05		**6E-08**
ETHYL ACETATE	141-78-6	3.00E+00	Y	7.40E-02	---	7.00E+01	**1E-03**	---	6.34E-03	-		**---**
ETHYLBENZENE	100-41-4	1.70E-01	Y	4.19E-03	---	1.00E+03	**4E-06**	---	3.59E-04	2.50E-06		**9E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.35E+00	N	3.33E-02	---	NA	**---**	---	2.85E-03	2.20E-05		**6E-08**
ISOPROPYL ALCOHOL	67-63-0	9.00E+01	Y	2.22E+00	---	2.00E+02	**1E-02**	---	1.90E-01	-		**---**
M,P-XYLENE	108-38-3	5.30E-01	Y	1.31E-02	---	1.00E+02	**1E-04**	---	1.12E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	3.35E-01	N	8.26E-03	---	6.00E+02	**1E-05**	---	7.08E-04	1.00E-08	M	**4E-11**
NAPHTHALENE	91-20-3	2.90E-02	N	7.15E-04	---	3.00E+00	**2E-04**	---	6.13E-05	3.40E-05		**2E-09**
O-XYLENE	95-47-6	2.20E-01	Y	5.43E-03	---	1.00E+02	**5E-05**	---	4.65E-04	-		**---**
TETRACHLOROETHENE	127-18-4	1.00E+01	Y	2.47E-01	---	4.00E+01	**6E-03**	---	2.11E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.80E-02	Y	6.91E-04	---	2.00E+00	**3E-04**	---	5.92E-05	4.10E-06	M	**5E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		**---**
VINYL CHLORIDE	75-01-4	1.65E-02	N	4.07E-04	---	8.00E+01	**5E-06**	---	3.49E-05	4.40E-06	M	**8E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0146H**	**Total Inhalation**	**5E-02**	**0E+00**	**3E-07**
		Based on NDs only	**3E-02**	**0E+00**	**2E-07**
		Based on Detects only	**2E-02**	**All ND**	**1E-07**
		Site-related only	**7E-03**	**0E+00**	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0146H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.35E-01	2.36E-03	1.42E-03	NA	NA	1.0E-08		2E-11	1E-11	---	---	**4E-11**
TRICHLOROETHENE	79-01-6	2.80E-02	1.97E-04	1.18E-04	NA	NA	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	2.80E-02	5.92E-05		NA		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	1.65E-02	1.16E-04	6.98E-05	NA	NA	4.4E-06		5E-10	3E-10	---	---	**8E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0148H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.20E-02	N	5.43E-04	---	NA	**---**	**---**	4.65E-05	5.80E-05		**3E-09**
1,3-BUTADIENE	106-99-0	1.00E-01	N	2.47E-03	---	2.00E+00	**1E-03**	**---**	2.11E-04	3.00E-05		**6E-09**
1,4-DIOXANE	123-91-1	1.60E-01	Y	3.95E-03	---	3.00E+01	**1E-04**	**---**	3.38E-04	5.00E-06		**2E-09**
1,1,2-TRICHLOROETHANE	79-00-5	2.05E-02	N	5.06E-04	---	2.00E-01	**3E-03**	**---**	4.33E-05	1.60E-05		**7E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	1.60E-02	---	2.00E+00	**8E-03**	**---**	1.37E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E+00	Y	2.96E-02	---	6.00E+01	**5E-04**	**---**	2.54E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	1.85E-03	---	9.00E+00	**2E-04**	**---**	1.59E-04	6.00E-04		**1E-07**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	2.71E-03	---	7.00E+00	**4E-04**	**---**	2.33E-04	2.60E-05		**6E-09**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	2.59E-03	---	4.00E+00	**6E-04**	**---**	2.22E-04	3.70E-06		**8E-10**
1,3,5-Trimethylbenzene	108-67-8	3.90E-01	Y	9.62E-03	---	6.00E+01	**2E-04**	**---**	8.25E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.10E-02	Y	1.01E-03	---	8.00E+02	**1E-06**	**---**	8.67E-05	1.10E-05		**1E-09**
BENZENE	71-43-2	8.80E-01	Y	2.17E-02	---	3.00E+01	**7E-04**	**---**	1.86E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	6.04E-03	---	1.00E+00	**6E-03**	**---**	5.18E-04	4.90E-05		**3E-08**
BROMODICHLOROMETHANE	75-27-4	2.50E-01	N	6.17E-03	---	NA	**---**	**---**	5.29E-04	3.70E-05		**2E-08**
BROMOMETHANE	74-83-9	8.00E-01	N	1.97E-02	---	5.00E+00	**4E-03**	**---**	1.69E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.60E-01	Y	1.38E-02	---	1.00E+02	**1E-04**	**---**	1.18E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	1.50E+00	Y	3.70E-02	---	9.77E+01	**4E-04**	**---**	3.17E-03	2.30E-05		**7E-08**
ETHYL ACETATE	141-78-6	8.40E+00	Y	2.07E-01	---	7.00E+01	**3E-03**	**---**	1.78E-02	-		**---**
ETHYLBENZENE	100-41-4	6.70E-01	Y	1.65E-02	---	1.00E+03	**2E-05**	**---**	1.42E-03	2.50E-06		**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	1.97E-02	---	NA	**---**	**---**	1.69E-03	2.20E-05		**4E-08**
ISOPROPYL ALCOHOL	67-63-0	6.30E+01	Y	1.55E+00	---	2.00E+02	**8E-03**	**---**	1.33E-01	-		**---**
M,P-XYLENE	108-38-3	2.00E+00	Y	4.93E-02	---	1.00E+02	**5E-04**	**---**	4.23E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	4.40E+01	Y	1.09E+00	---	6.00E+02	**2E-03**	**---**	9.30E-02	1.00E-08	M	**5E-09**
NAPHTHALENE	91-20-3	5.70E-02	Y	1.41E-03	---	3.00E+00	**5E-04**	**---**	1.21E-04	3.40E-05		**4E-09**
O-XYLENE	95-47-6	7.80E-01	Y	1.92E-02	---	1.00E+02	**2E-04**	**---**	1.65E-03	-		**---**
TETRACHLOROETHENE	127-18-4	2.20E+00	Y	5.43E-02	---	4.00E+01	**1E-03**	**---**	4.65E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	1.23E-03	---	2.00E+00	**6E-04**	**---**	1.06E-04	4.10E-06	M	**9E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-03	N	1.60E-04	---	8.00E+01	**2E-06**	**---**	1.37E-05	4.40E-06	M	**3E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0148H**	**Total Inhalation**	**4E-02**	**0E+00**	**3E-07**
		Based on NDs only	**2E-02**	**0E+00**	**2E-07**
		Based on Detects only	**2E-02**	**All ND**	**1E-07**
		Site-related only	**2E-03**	**0E+00**	**4E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0148H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.40E+01	3.10E-01	1.86E-01	NA	NA	1.0E-08		3E-09	2E-09	---	---	**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	3.52E-04	2.11E-04	NA	NA	1.0E-06	kidney	4E-10	2E-10	---	---	**6E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	1.06E-04		NA		3.1E-06	NHL+liver	3E-10		---		**3E-10**
VINYL CHLORIDE	75-01-4	6.50E-03	4.58E-05	2.75E-05	NA	NA	4.4E-06		2E-10	1E-10	---	---	**3E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0153H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.05E-02	N	5.06E-04	---	NA	**---**	**---**	4.33E-05	5.80E-05		**3E-09**
1,3-BUTADIENE	106-99-0	9.00E-02	N	2.22E-03	---	2.00E+00	**1E-03**	**---**	1.90E-04	3.00E-05		**6E-09**
1,4-DIOXANE	123-91-1	1.90E-01	Y	4.69E-03	---	3.00E+01	**2E-04**	**---**	4.02E-04	5.00E-06		**2E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.90E-02	N	4.69E-04	---	2.00E-01	**2E-03**	**---**	4.02E-05	1.60E-05		**6E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	1.48E-02	---	2.00E+00	**7E-03**	**---**	1.27E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.40E-01	Y	1.09E-02	---	6.00E+01	**2E-04**	**---**	9.30E-04	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	1.73E-03	---	9.00E+00	**2E-04**	**---**	1.48E-04	6.00E-04		**9E-08**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	2.71E-03	---	7.00E+00	**4E-04**	**---**	2.33E-04	2.60E-05		**6E-09**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	2.34E-03	---	4.00E+00	**6E-04**	**---**	2.01E-04	3.70E-06		**7E-10**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	2.84E-03	---	6.00E+01	**5E-05**	**---**	2.43E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	7.50E-02	N	1.85E-03	---	8.00E+02	**2E-06**	**---**	1.59E-04	1.10E-05		**2E-09**
BENZENE	71-43-2	7.10E-01	Y	1.75E-02	---	3.00E+01	**6E-04**	**---**	1.50E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	2.30E-01	N	5.67E-03	---	1.00E+00	**6E-03**	**---**	4.86E-04	4.90E-05		**2E-08**
BROMODICHLOROMETHANE	75-27-4	2.30E-01	N	5.67E-03	---	NA	**---**	**---**	4.86E-04	3.70E-05		**2E-08**
BROMOMETHANE	74-83-9	7.50E-01	N	1.85E-02	---	5.00E+00	**4E-03**	**---**	1.59E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	1.09E-02	---	1.00E+02	**1E-04**	**---**	9.30E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	1.10E+00	Y	2.71E-02	---	9.77E+01	**3E-04**	**---**	2.33E-03	2.30E-05		**5E-08**
ETHYL ACETATE	141-78-6	8.00E+00	Y	1.97E-01	---	7.00E+01	**3E-03**	**---**	1.69E-02	-		**---**
ETHYLBENZENE	100-41-4	2.80E-01	Y	6.91E-03	---	1.00E+03	**7E-06**	**---**	5.92E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	1.85E-02	---	NA	**---**	**---**	1.59E-03	2.20E-05		**3E-08**
ISOPROPYL ALCOHOL	67-63-0	7.00E+01	Y	1.73E+00	---	2.00E+02	**9E-03**	**---**	1.48E-01	-		**---**
M,P-XYLENE	108-38-3	9.30E-01	Y	2.29E-02	---	1.00E+02	**2E-04**	**---**	1.97E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	6.10E-01	Y	1.50E-02	---	6.00E+02	**3E-05**	**---**	1.29E-03	1.00E-08	M	**7E-11**
NAPHTHALENE	91-20-3	2.80E-02	N	6.91E-04	---	3.00E+00	**2E-04**	**---**	5.92E-05	3.40E-05		**2E-09**
O-XYLENE	95-47-6	3.20E-01	Y	7.89E-03	---	1.00E+02	**8E-05**	**---**	6.77E-04	-		**---**
TETRACHLOROETHENE	127-18-4	8.20E-01	Y	2.02E-02	---	4.00E+01	**5E-04**	**---**	1.73E-03	2.60E-07		**5E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	N	1.23E-03	---	2.00E+00	**6E-04**	**---**	1.06E-04	4.10E-06	M	**9E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.00E-03	N	1.48E-04	---	8.00E+01	**2E-06**	**---**	1.27E-05	4.40E-06	M	**3E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0153H**	**Total Inhalation**	**4E-02**	**0E+00**	**3E-07**
		Based on NDs only	**2E-02**	**0E+00**	**2E-07**
		Based on Detects only	**1E-02**	**All ND**	**8E-08**
		Site-related only	**1E-03**	**0E+00**	**4E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0153H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.10E-01	4.30E-03	2.58E-03	NA	NA	1.0E-08		4E-11	3E-11	---	---	**7E-11**
TRICHLOROETHENE	79-01-6	5.00E-02	3.52E-04	2.11E-04	NA	NA	1.0E-06	kidney	4E-10	2E-10	---	---	**6E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	1.06E-04		NA		3.1E-06	NHL+liver	3E-10		---		**3E-10**
VINYL CHLORIDE	75-01-4	6.00E-03	4.23E-05	2.54E-05	NA	NA	4.4E-06		2E-10	1E-10	---	---	**3E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0162H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.50E-02	N	6.17E-04	---	NA	**---**	**---**	5.29E-05	5.80E-05		**3E-09**
1,3-BUTADIENE	106-99-0	1.15E-01	N	2.84E-03	---	2.00E+00	**1E-03**	**---**	2.43E-04	3.00E-05		**7E-09**
1,4-DIOXANE	123-91-1	2.00E-01	Y	4.93E-03	---	3.00E+01	**2E-04**	**---**	4.23E-04	5.00E-06		**2E-09**
1,1,2-TRICHLOROETHANE	79-00-5	2.35E-02	N	5.80E-04	---	2.00E-01	**3E-03**	**---**	4.97E-05	1.60E-05		**8E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	7.50E-01	N	1.85E-02	---	2.00E+00	**9E-03**	**---**	1.59E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E+00	Y	2.96E-02	---	6.00E+01	**5E-04**	**---**	2.54E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	8.50E-02	N	2.10E-03	---	9.00E+00	**2E-04**	**---**	1.80E-04	6.00E-04		**1E-07**
1,2-DICHLOROETHANE	107-06-2	9.60E-01	Y	2.37E-02	---	7.00E+00	**3E-03**	**---**	2.03E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	1.20E-01	N	2.96E-03	---	4.00E+00	**7E-04**	**---**	2.54E-04	3.70E-06		**9E-10**
1,3,5-Trimethylbenzene	108-67-8	2.90E-01	Y	7.15E-03	---	6.00E+01	**1E-04**	**---**	6.13E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.50E-02	N	2.34E-03	---	8.00E+02	**3E-06**	**---**	2.01E-04	1.10E-05		**2E-09**
BENZENE	71-43-2	2.50E+00	Y	6.17E-02	---	3.00E+01	**2E-03**	**---**	5.29E-03	7.80E-06		**4E-08**
BENZYL CHLORIDE	100-44-7	2.80E-01	N	6.91E-03	---	1.00E+00	**7E-03**	**---**	5.92E-04	4.90E-05		**3E-08**
BROMODICHLOROMETHANE	75-27-4	2.85E-01	N	7.03E-03	---	NA	**---**	**---**	6.03E-04	3.70E-05		**2E-08**
BROMOMETHANE	74-83-9	9.50E-01	N	2.34E-02	---	5.00E+00	**5E-03**	**---**	2.01E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	1.18E-02	---	1.00E+02	**1E-04**	**---**	1.01E-03	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	6.80E-01	Y	1.68E-02	---	9.77E+01	**2E-04**	**---**	1.44E-03	2.30E-05		**3E-08**
ETHYL ACETATE	141-78-6	6.50E-01	Y	1.60E-02	---	7.00E+01	**2E-04**	**---**	1.37E-03	-		**---**
ETHYLBENZENE	100-41-4	1.20E+00	Y	2.96E-02	---	1.00E+03	**3E-05**	**---**	2.54E-03	2.50E-06		**6E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	9.00E-01	N	2.22E-02	---	NA	**---**	**---**	1.90E-03	2.20E-05		**4E-08**
ISOPROPYL ALCOHOL	67-63-0	1.10E+01	Y	2.71E-01	---	2.00E+02	**1E-03**	**---**	2.33E-02	-		**---**
M,P-XYLENE	108-38-3	5.20E+00	Y	1.28E-01	---	1.00E+02	**1E-03**	**---**	1.10E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	7.50E-01	Y	1.85E-02	---	6.00E+02	**3E-05**	**---**	1.59E-03	1.00E-08	M	**8E-11**
NAPHTHALENE	91-20-3	2.75E-02	N	6.78E-04	---	3.00E+00	**2E-04**	**---**	5.81E-05	3.40E-05		**2E-09**
O-XYLENE	95-47-6	1.50E+00	Y	3.70E-02	---	1.00E+02	**4E-04**	**---**	3.17E-03	-		**---**
TETRACHLOROETHENE	127-18-4	5.20E-01	Y	1.28E-02	---	4.00E+01	**3E-04**	**---**	1.10E-03	2.60E-07		**3E-10**
TRICHLOROETHENE	79-01-6	2.90E-02	Y	7.15E-04	---	2.00E+00	**4E-04**	**---**	6.13E-05	4.10E-06	M	**5E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	7.50E-03	N	1.85E-04	---	8.00E+01	**2E-06**	**---**	1.59E-05	4.40E-06	M	**4E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0162H**	**Total Inhalation**	**4E-02**	**0E+00**	**4E-07**
		Based on NDs only	**3E-02**	**0E+00**	**2E-07**
		Based on Detects only	**1E-02**	**All ND**	**1E-07**
		Site-related only	**8E-04**	**0E+00**	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0162H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.50E-01	5.29E-03	3.17E-03	NA	NA	1.0E-08		5E-11	3E-11	---	---	**8E-11**
TRICHLOROETHENE	79-01-6	2.90E-02	2.04E-04	1.23E-04	NA	NA	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	2.90E-02	6.13E-05		NA		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	7.50E-03	5.29E-05	3.17E-05	NA	NA	4.4E-06		2E-10	1E-10	---	---	**4E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0166H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00E-02	N	4.93E-04	---	NA	**---**	**---**	4.23E-05	5.80E-05		**2E-09**
1,3-BUTADIENE	106-99-0	9.00E-02	N	2.22E-03	---	2.00E+00	**1E-03**	**---**	1.90E-04	3.00E-05		**6E-09**
1,4-DIOXANE	123-91-1	1.50E-01	Y	3.70E-03	---	3.00E+01	**1E-04**	**---**	3.17E-04	5.00E-06		**2E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.85E-02	N	4.56E-04	---	2.00E-01	**2E-03**	**---**	3.91E-05	1.60E-05		**6E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	1.10E+00	N	2.71E-02	---	2.00E+00	**1E-02**	**---**	2.33E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	3.20E-01	Y	7.89E-03	---	6.00E+01	**1E-04**	**---**	6.77E-04	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.50E-02	N	1.60E-03	---	9.00E+00	**2E-04**	**---**	1.37E-04	6.00E-04		**8E-08**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	2.71E-03	---	7.00E+00	**4E-04**	**---**	2.33E-04	2.60E-05		**6E-09**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	2.34E-03	---	4.00E+00	**6E-04**	**---**	2.01E-04	3.70E-06		**7E-10**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	2.84E-03	---	6.00E+01	**5E-05**	**---**	2.43E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	7.50E-02	N	1.85E-03	---	8.00E+02	**2E-06**	**---**	1.59E-04	1.10E-05		**2E-09**
BENZENE	71-43-2	6.20E-01	Y	1.53E-02	---	3.00E+01	**5E-04**	**---**	1.31E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	2.25E-01	N	5.55E-03	---	1.00E+00	**6E-03**	**---**	4.76E-04	4.90E-05		**2E-08**
BROMODICHLOROMETHANE	75-27-4	2.25E-01	N	5.55E-03	---	NA	**---**	**---**	4.76E-04	3.70E-05		**2E-08**
BROMOMETHANE	74-83-9	7.50E-01	N	1.85E-02	---	5.00E+00	**4E-03**	**---**	1.59E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	1.16E-02	---	1.00E+02	**1E-04**	**---**	9.94E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	1.60E+00	Y	3.95E-02	---	9.77E+01	**4E-04**	**---**	3.38E-03	2.30E-05		**8E-08**
ETHYL ACETATE	141-78-6	1.40E+01	Y	3.45E-01	---	7.00E+01	**5E-03**	**---**	2.96E-02	-		**---**
ETHYLBENZENE	100-41-4	3.30E-01	Y	8.14E-03	---	1.00E+03	**8E-06**	**---**	6.98E-04	2.50E-06		**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	2.10E-02	---	NA	**---**	**---**	1.80E-03	2.20E-05		**4E-08**
ISOPROPYL ALCOHOL	67-63-0	3.80E+02	Y	9.37E+00	---	2.00E+02	**5E-02**	**---**	8.03E-01	-		**---**
M,P-XYLENE	108-38-3	1.10E+00	Y	2.71E-02	---	1.00E+02	**3E-04**	**---**	2.33E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	1.60E+00	Y	3.95E-02	---	6.00E+02	**7E-05**	**---**	3.38E-03	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	2.95E-02	N	7.28E-04	---	3.00E+00	**2E-04**	**---**	6.24E-05	3.40E-05		**2E-09**
O-XYLENE	95-47-6	3.60E-01	Y	8.88E-03	---	1.00E+02	**9E-05**	**---**	7.61E-04	-		**---**
TETRACHLOROETHENE	127-18-4	5.70E+00	Y	1.41E-01	---	4.00E+01	**4E-03**	**---**	1.21E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	9.80E-01	Y	2.42E-02	---	2.00E+00	**1E-02**	**---**	2.07E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.00E-03	N	1.48E-04	---	8.00E+01	**2E-06**	**---**	1.27E-05	4.40E-06	M	**3E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0166H**	**Total Inhalation**	**1E-01**	**0E+00**	**3E-07**
		Based on NDs only	**3E-02**	**0E+00**	**2E-07**
		Based on Detects only	**7E-02**	**All ND**	**1E-07**
		Site-related only	**2E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0166H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.60E+00	1.13E-02	6.77E-03	NA	NA	1.0E-08		1E-10	7E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	9.80E-01	6.91E-03	4.14E-03	NA	NA	1.0E-06	kidney	7E-09	4E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	9.80E-01	2.07E-03		NA		3.1E-06	NHL+liver	6E-09		---		**6E-09**
VINYL CHLORIDE	75-01-4	6.00E-03	4.23E-05	2.54E-05	NA	NA	4.4E-06		2E-10	1E-10	---	---	**3E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0172H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.30E-02	N	5.67E-04	---	NA	---	---	4.86E-05	5.80E-05		**3E-09**
1,3-BUTADIENE	106-99-0	4.75E-02	N	1.17E-03	---	2.00E+00	**6E-04**	---	1.00E-04	3.00E-05		**3E-09**
1,4-DIOXANE	123-91-1	8.00E-02	N	1.97E-03	---	3.00E+01	**7E-05**	---	1.69E-04	5.00E-06		**8E-10**
1,1,2-TRICHLOROETHANE	79-00-5	1.15E-02	N	2.84E-04	---	2.00E-01	**1E-03**	---	2.43E-05	1.60E-05		**4E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	4.75E-01	N	1.17E-02	---	2.00E+00	**6E-03**	---	1.00E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.20E-01	Y	1.28E-02	---	6.00E+01	**2E-04**	---	1.10E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.15E-02	N	1.02E-03	---	9.00E+00	**1E-04**	---	8.77E-05	6.00E-04		**5E-08**
1,2-DICHLOROETHANE	107-06-2	7.30E-02	Y	1.80E-03	---	7.00E+00	**3E-04**	---	1.54E-04	2.60E-05		**4E-09**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	2.22E-03	---	4.00E+00	**6E-04**	---	1.90E-04	3.70E-06		**7E-10**
1,3,5-Trimethylbenzene	108-67-8	1.60E-01	Y	3.95E-03	---	6.00E+01	**7E-05**	---	3.38E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.35E-02	N	1.07E-03	---	8.00E+02	**1E-06**	---	9.20E-05	1.10E-05		**1E-09**
BENZENE	71-43-2	3.40E-01	Y	8.39E-03	---	3.00E+01	**3E-04**	---	7.19E-04	7.80E-06		**6E-09**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	2.59E-03	---	1.00E+00	**3E-03**	---	2.22E-04	4.90E-05		**1E-08**
BROMODICHLOROMETHANE	75-27-4	1.05E-01	N	2.59E-03	---	NA	**---**	---	2.22E-04	3.70E-05		**8E-09**
BROMOMETHANE	74-83-9	5.50E-01	N	1.36E-02	---	5.00E+00	**3E-03**	---	1.16E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	1.01E-02	---	1.00E+02	**1E-04**	---	8.67E-04	6.00E-06		**5E-09**
CHLOROFORM	67-66-3	1.40E-01	Y	3.45E-03	---	9.77E+01	**4E-05**	---	2.96E-04	2.30E-05		**7E-09**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	---	---	-		**---**
ETHYLBENZENE	100-41-4	9.80E-02	Y	2.42E-03	---	1.00E+03	**2E-06**	---	2.07E-04	2.50E-06		**5E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.90E-01	N	9.62E-03	---	NA	**---**	---	8.25E-04	2.20E-05		**2E-08**
ISOPROPYL ALCOHOL	67-63-0	1.20E+01	Y	2.96E-01	---	2.00E+02	**1E-03**	---	2.54E-02	-		**---**
M,P-XYLENE	108-38-3	3.30E-01	Y	8.14E-03	---	1.00E+02	**8E-05**	---	6.98E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	5.40E-01	Y	1.33E-02	---	6.00E+02	**2E-05**	---	1.14E-03	1.00E-08	M	**6E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.20E-01	Y	2.96E-03	---	1.00E+02	**3E-05**	---	2.54E-04	-		**---**
TETRACHLOROETHENE	127-18-4	4.30E+00	Y	1.06E-01	---	4.00E+01	**3E-03**	---	9.09E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	2.80E-02	Y	6.91E-04	---	2.00E+00	**3E-04**	---	5.92E-05	4.10E-06	M	**5E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		**---**
VINYL CHLORIDE	75-01-4	3.65E-03	N	9.00E-05	---	8.00E+01	**1E-06**	---	7.72E-06	4.40E-06	M	**2E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0172H**	**Total Inhalation**	**2E-02**	**0E+00**	**1E-07**
		Based on NDs only	**1E-02**	**0E+00**	**1E-07**
		Based on Detects only	**6E-03**	**All ND**	**3E-08**
		Site-related only	**3E-03**	**0E+00**	**4E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0172H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.40E-01	3.81E-03	2.28E-03	NA	NA	1.0E-08		4E-11	2E-11	---	---	**6E-11**
TRICHLOROETHENE	79-01-6	2.80E-02	1.97E-04	1.18E-04	NA	NA	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	2.80E-02	5.92E-05		NA		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	3.65E-03	2.57E-05	1.54E-05	NA	NA	4.4E-06		1E-10	7E-11	---	---	**2E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0173H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.20E-02	N	5.43E-04	---	NA	---	---	4.65E-05	5.80E-05		**3E-09**
1,3-BUTADIENE	106-99-0	1.00E-01	N	2.47E-03	---	2.00E+00	**1E-03**	---	2.11E-04	3.00E-05		**6E-09**
1,4-DIOXANE	123-91-1	1.40E-01	Y	3.45E-03	---	3.00E+01	**1E-04**	---	2.96E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	2.05E-02	N	5.06E-04	---	2.00E-01	**3E-03**	---	4.33E-05	1.60E-05		**7E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	1.60E-02	---	2.00E+00	**8E-03**	---	1.37E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.70E-01	Y	1.16E-02	---	6.00E+01	**2E-04**	---	9.94E-04	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	1.73E-03	---	9.00E+00	**2E-04**	---	1.48E-04	6.00E-04		**9E-08**
1,2-DICHLOROETHANE	107-06-2	2.00E-01	Y	4.93E-03	---	7.00E+00	**7E-04**	---	4.23E-04	2.60E-05		**1E-08**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	2.59E-03	---	4.00E+00	**6E-04**	---	2.22E-04	3.70E-06		**8E-10**
1,3,5-Trimethylbenzene	108-67-8	1.25E-01	N	3.08E-03	---	6.00E+01	**5E-05**	---	2.64E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	1.97E-03	---	8.00E+02	**2E-06**	---	1.69E-04	1.10E-05		**2E-09**
BENZENE	71-43-2	5.70E-01	Y	1.41E-02	---	3.00E+01	**5E-04**	---	1.21E-03	7.80E-06		**9E-09**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	6.04E-03	---	1.00E+00	**6E-03**	---	5.18E-04	4.90E-05		**3E-08**
BROMODICHLOROMETHANE	75-27-4	2.50E-01	N	6.17E-03	---	NA	---	---	5.29E-04	3.70E-05		**2E-08**
BROMOMETHANE	74-83-9	8.00E-01	N	1.97E-02	---	5.00E+00	**4E-03**	---	1.69E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	1.11E-02	---	1.00E+02	**1E-04**	---	9.51E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	2.00E+00	Y	4.93E-02	---	9.77E+01	**5E-04**	---	4.23E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	7.00E+00	Y	1.73E-01	---	7.00E+01	**2E-03**	---	1.48E-02	-		---
ETHYLBENZENE	100-41-4	1.10E-01	Y	2.71E-03	---	1.00E+03	**3E-06**	---	2.33E-04	2.50E-06		**6E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	1.97E-02	---	NA	---	---	1.69E-03	2.20E-05		**4E-08**
ISOPROPYL ALCOHOL	67-63-0	2.70E+01	Y	6.66E-01	---	2.00E+02	**3E-03**	---	5.71E-02	-		---
M,P-XYLENE	108-38-3	4.50E-01	Y	1.11E-02	---	1.00E+02	**1E-04**	---	9.51E-04	-		---
METHYLENE CHLORIDE	75-09-2	3.25E-01	N	8.02E-03	---	6.00E+02	**1E-05**	---	6.87E-04	1.00E-08	M	**4E-11**
NAPHTHALENE	91-20-3	2.90E-02	N	7.15E-04	---	3.00E+00	**2E-04**	---	6.13E-05	3.40E-05		**2E-09**
O-XYLENE	95-47-6	2.10E-01	Y	5.18E-03	---	1.00E+02	**5E-05**	---	4.44E-04	-		---
TETRACHLOROETHENE	127-18-4	5.10E+00	Y	1.26E-01	---	4.00E+01	**3E-03**	---	1.08E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	1.20E-01	Y	2.96E-03	---	2.00E+00	**1E-03**	---	2.54E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	6.50E-03	N	1.60E-04	---	8.00E+01	**2E-06**	---	1.37E-05	4.40E-06	M	**3E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0173H**	**Total Inhalation**	**4E-02**	**0E+00**	**3E-07**
		Based on NDs only	**2E-02**	**0E+00**	**2E-07**
		Based on Detects only	**1E-02**	**All ND**	**1E-07**
		Site-related only	**5E-03**	**0E+00**	**7E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0173H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.25E-01	2.29E-03	1.37E-03	NA	NA	1.0E-08		2E-11	1E-11	---	---	**4E-11**
TRICHLOROETHENE	79-01-6	1.20E-01	8.46E-04	5.07E-04	NA	NA	1.0E-06	kidney	8E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	1.20E-01	2.54E-04		NA		3.1E-06	NHL+liver	8E-10		---		**8E-10**
VINYL CHLORIDE	75-01-4	6.50E-03	4.58E-05	2.75E-05	NA	NA	4.4E-06		2E-10	1E-10	---	---	**3E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0174H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00E-02	N	4.93E-04	---	NA	---	---	4.23E-05	5.80E-05		**2E-09**
1,3-BUTADIENE	106-99-0	9.00E-02	N	2.22E-03	---	2.00E+00	**1E-03**	---	1.90E-04	3.00E-05		**6E-09**
1,4-DIOXANE	123-91-1	5.50E-01	Y	1.36E-02	---	3.00E+01	**5E-04**	---	1.16E-03	5.00E-06		**6E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.85E-02	N	4.56E-04	---	2.00E-01	**2E-03**	---	3.91E-05	1.60E-05		**6E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	1.48E-02	---	2.00E+00	**7E-03**	---	1.27E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.40E-01	Y	1.58E-02	---	6.00E+01	**3E-04**	---	1.35E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.50E-02	N	1.60E-03	---	9.00E+00	**2E-04**	---	1.37E-04	6.00E-04		**8E-08**
1,2-DICHLOROETHANE	107-06-2	2.20E+00	Y	5.43E-02	---	7.00E+00	**8E-03**	---	4.65E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	2.34E-03	---	4.00E+00	**6E-04**	---	2.01E-04	3.70E-06		**7E-10**
1,3,5-Trimethylbenzene	108-67-8	2.20E-01	Y	5.43E-03	---	6.00E+01	**9E-05**	---	4.65E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.70E-01	Y	4.19E-03	---	8.00E+02	**5E-06**	---	3.59E-04	1.10E-05		**4E-09**
BENZENE	71-43-2	9.30E-01	Y	2.29E-02	---	3.00E+01	**8E-04**	---	1.97E-03	7.80E-06		**2E-08**
BENZYL CHLORIDE	100-44-7	2.25E-01	N	5.55E-03	---	1.00E+00	**6E-03**	---	4.76E-04	4.90E-05		**2E-08**
BROMODICHLOROMETHANE	75-27-4	1.00E+00	Y	2.47E-02	---	NA	**---**	---	2.11E-03	3.70E-05		**8E-08**
BROMOMETHANE	74-83-9	7.50E-01	N	1.85E-02	---	5.00E+00	**4E-03**	---	1.59E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	7.10E-01	Y	1.75E-02	---	1.00E+02	**2E-04**	---	1.50E-03	6.00E-06		**9E-09**
CHLOROFORM	67-66-3	4.20E+00	Y	1.04E-01	---	9.77E+01	**1E-03**	---	8.88E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	1.00E+01	Y	2.47E-01	---	7.00E+01	**4E-03**	---	2.11E-02	-		**---**
ETHYLBENZENE	100-41-4	2.30E+00	Y	5.67E-02	---	1.00E+03	**6E-05**	---	4.86E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	1.85E-02	---	NA	**---**	---	1.59E-03	2.20E-05		**3E-08**
ISOPROPYL ALCOHOL	67-63-0	1.80E+01	Y	4.44E-01	---	2.00E+02	**2E-03**	---	3.81E-02	-		**---**
M,P-XYLENE	108-38-3	8.20E+00	Y	2.02E-01	---	1.00E+02	**2E-03**	---	1.73E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	2.20E+00	Y	5.43E-02	---	6.00E+02	**9E-05**	---	4.65E-03	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	2.90E-02	N	7.15E-04	---	3.00E+00	**2E-04**	---	6.13E-05	3.40E-05		**2E-09**
O-XYLENE	95-47-6	2.30E+00	Y	5.67E-02	---	1.00E+02	**6E-04**	---	4.86E-03	-		**---**
TETRACHLOROETHENE	127-18-4	1.70E+00	Y	4.19E-02	---	4.00E+01	**1E-03**	---	3.59E-03	2.60E-07		**9E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	N	1.23E-03	---	2.00E+00	**6E-04**	---	1.06E-04	4.10E-06	M	**9E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		**---**
VINYL CHLORIDE	75-01-4	1.00E-01	Y	2.47E-03	---	8.00E+01	**3E-05**	---	2.11E-04	4.40E-06	M	**5E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0174H**	**Total Inhalation**	**4E-02**	**0E+00**	**6E-07**
		Based on NDs only	**2E-02**	**0E+00**	**2E-07**
		Based on Detects only	**2E-02**	**All ND**	**5E-07**
		Site-related only	**2E-03**	**0E+00**	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0174H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.20E+00	1.55E-02	9.30E-03	NA	NA	1.0E-08		2E-10	9E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	3.52E-04	2.11E-04	NA	NA	1.0E-06	kidney	4E-10	2E-10	---	---	**6E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	1.06E-04		NA		3.1E-06	NHL+liver	3E-10		---		**3E-10**
VINYL CHLORIDE	75-01-4	1.00E-01	7.05E-04	4.23E-04	NA	NA	4.4E-06		3E-09	2E-09	---	---	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0180H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.65E-02	N	6.54E-04	---	NA	---	---	5.60E-05	5.80E-05		**3E-09**
1,3-BUTADIENE	106-99-0	5.50E-02	N	1.36E-03	---	2.00E+00	**7E-04**	---	1.16E-04	3.00E-05		**3E-09**
1,4-DIOXANE	123-91-1	9.00E-02	N	2.22E-03	---	3.00E+01	**7E-05**	---	1.90E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.30E-02	N	3.21E-04	---	2.00E-01	**2E-03**	---	2.75E-05	1.60E-05		**4E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	5.50E-01	N	1.36E-02	---	2.00E+00	**7E-03**	---	1.16E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.00E-02	N	1.48E-03	---	6.00E+01	**2E-05**	---	1.27E-04	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.70E-02	N	1.16E-03	---	9.00E+00	**1E-04**	---	9.94E-05	6.00E-04		**6E-08**
1,2-DICHLOROETHANE	107-06-2	7.30E-02	Y	1.80E-03	---	7.00E+00	**3E-04**	---	1.54E-04	2.60E-05		**4E-09**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	2.59E-03	---	4.00E+00	**6E-04**	---	2.22E-04	3.70E-06		**8E-10**
1,3,5-Trimethylbenzene	108-67-8	9.00E-02	N	2.22E-03	---	6.00E+01	**4E-05**	---	1.90E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.95E-02	N	1.22E-03	---	8.00E+02	**2E-06**	---	1.05E-04	1.10E-05		**1E-09**
BENZENE	71-43-2	3.70E-01	Y	9.13E-03	---	3.00E+01	**3E-04**	---	7.82E-04	7.80E-06		**6E-09**
BENZYL CHLORIDE	100-44-7	1.15E-01	N	2.84E-03	---	1.00E+00	**3E-03**	---	2.43E-04	4.90E-05		**1E-08**
BROMODICHLOROMETHANE	75-27-4	1.20E-01	N	2.96E-03	---	NA	**---**	---	2.54E-04	3.70E-05		**9E-09**
BROMOMETHANE	74-83-9	6.50E-01	N	1.60E-02	---	5.00E+00	**3E-03**	---	1.37E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	1.04E-02	---	1.00E+02	**1E-04**	---	8.88E-04	6.00E-06		**5E-09**
CHLOROFORM	67-66-3	1.30E-01	Y	3.21E-03	---	9.77E+01	**3E-05**	---	2.75E-04	2.30E-05		**6E-09**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	---	---	-		**---**
ETHYLBENZENE	100-41-4	5.60E-02	Y	1.38E-03	---	1.00E+03	**1E-06**	---	1.18E-04	2.50E-06		**3E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.45E-01	N	1.10E-02	---	NA	**---**	---	9.41E-04	2.20E-05		**2E-08**
ISOPROPYL ALCOHOL	67-63-0	1.30E+01	Y	3.21E-01	---	2.00E+02	**2E-03**	---	2.75E-02	-		**---**
M,P-XYLENE	108-38-3	1.90E-01	Y	4.69E-03	---	1.00E+02	**5E-05**	---	4.02E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	6.80E-01	Y	1.68E-02	---	6.00E+02	**3E-05**	---	1.44E-03	1.00E-08	M	**8E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	6.10E-02	Y	1.50E-03	---	1.00E+02	**2E-05**	---	1.29E-04	-		**---**
TETRACHLOROETHENE	127-18-4	4.40E-02	Y	1.09E-03	---	4.00E+01	**3E-05**	---	9.30E-05	2.60E-07		**2E-11**
TRICHLOROETHENE	79-01-6	9.00E-03	N	2.22E-04	---	2.00E+00	**1E-04**	---	1.90E-05	4.10E-06	M	**2E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		**---**
VINYL CHLORIDE	75-01-4	4.20E-03	N	1.04E-04	---	8.00E+01	**1E-06**	---	8.88E-06	4.40E-06	M	**2E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0180H**	**Total Inhalation**	**2E-02**	**0E+00**	**1E-07**
		Based on NDs only	**2E-02**	**0E+00**	**1E-07**
		Based on Detects only	**2E-03**	**All ND**	**2E-08**
		Site-related only	**2E-04**	**0E+00**	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0180H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.80E-01	4.79E-03	2.88E-03	NA	NA	1.0E-08		5E-11	3E-11	---	---	**8E-11**
TRICHLOROETHENE	79-01-6	9.00E-03	6.34E-05	3.81E-05	NA	NA	1.0E-06	kidney	6E-11	4E-11	---	---	**1E-10**
TRICHLOROETHENE	79-01-6	9.00E-03	1.90E-05		NA		3.1E-06	NHL+liver	6E-11		---		**6E-11**
VINYL CHLORIDE	75-01-4	4.20E-03	2.96E-05	1.78E-05	NA	NA	4.4E-06		1E-10	8E-11	---	---	**2E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0189H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	2.59E-04	---	NA	---	---	2.22E-05	5.80E-05		**1E-09**
1,3-BUTADIENE	106-99-0	4.95E-02	N	1.22E-03	---	2.00E+00	**6E-04**	---	1.05E-04	3.00E-05		**3E-09**
1,4-DIOXANE	123-91-1	7.00E-02	N	1.73E-03	---	3.00E+01	**6E-05**	---	1.48E-04	5.00E-06		**7E-10**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	1.73E-04	---	2.00E-01	**9E-04**	---	1.48E-05	1.60E-05		**2E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	4.85E-01	N	1.20E-02	---	2.00E+00	**6E-03**	---	1.03E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.30E-01	Y	3.21E-03	---	6.00E+01	**5E-05**	---	2.75E-04	-		---
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	8.14E-04	---	9.00E+00	**9E-05**	---	6.98E-05	6.00E-04		**4E-08**
1,2-DICHLOROETHANE	107-06-2	7.40E-02	Y	1.83E-03	---	7.00E+00	**3E-04**	---	1.56E-04	2.60E-05		**4E-09**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	2.22E-03	---	4.00E+00	**6E-04**	---	1.90E-04	3.70E-06		**7E-10**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	1.48E-03	---	6.00E+01	**2E-05**	---	1.27E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	1.23E-03	---	8.00E+02	**2E-06**	---	1.06E-04	1.10E-05		**1E-09**
BENZENE	71-43-2	4.10E-01	Y	1.01E-02	---	3.00E+01	**3E-04**	---	8.67E-04	7.80E-06		**7E-09**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	2.10E-03	---	1.00E+00	**2E-03**	---	1.80E-04	4.90E-05		**9E-09**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	3.08E-03	---	NA	---	---	2.64E-04	3.70E-05		**1E-08**
BROMOMETHANE	74-83-9	6.50E-01	N	1.60E-02	---	5.00E+00	**3E-03**	---	1.37E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	1.16E-02	---	1.00E+02	**1E-04**	---	9.94E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	8.40E-01	Y	2.07E-02	---	9.77E+01	**2E-04**	---	1.78E-03	2.30E-05		**4E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.70E-01	Y	4.19E-03	---	1.00E+03	**4E-06**	---	3.59E-04	2.50E-06		**9E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	1.60E-02	---	NA	---	---	1.37E-03	2.20E-05		**3E-08**
ISOPROPYL ALCOHOL	67-63-0	2.40E+02	Y	5.92E+00	---	2.00E+02	**3E-02**	---	5.07E-01	-		---
M,P-XYLENE	108-38-3	4.80E-01	Y	1.18E-02	---	1.00E+02	**1E-04**	---	1.01E-03	-		---
METHYLENE CHLORIDE	75-09-2	2.15E-01	N	5.30E-03	---	6.00E+02	**9E-06**	---	4.55E-04	1.00E-08	M	**2E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.70E-01	Y	4.19E-03	---	1.00E+02	**4E-05**	---	3.59E-04	-		---
TETRACHLOROETHENE	127-18-4	2.60E+00	Y	6.41E-02	---	4.00E+01	**2E-03**	---	5.50E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	1.90E-01	Y	4.69E-03	---	2.00E+00	**2E-03**	---	4.02E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.00E-03	N	1.97E-04	---	8.00E+01	**2E-06**	---	1.69E-05	4.40E-06	M	**4E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0189H**	**Total Inhalation**	**5E-02**	**0E+00**	**2E-07**
		Based on NDs only	**1E-02**	**0E+00**	**1E-07**
		Based on Detects only	**3E-02**	**All ND**	**6E-08**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0189H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.15E-01	1.52E-03	9.09E-04	NA	NA	1.0E-08		2E-11	9E-12	---	---	**2E-11**
TRICHLOROETHENE	79-01-6	1.90E-01	1.34E-03	8.03E-04	NA	NA	1.0E-06	kidney	1E-09	8E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	1.90E-01	4.02E-04		NA		3.1E-06	NHL+liver	1E-09		---		**1E-09**
VINYL CHLORIDE	75-01-4	8.00E-03	5.64E-05	3.38E-05	NA	NA	4.4E-06		2E-10	1E-10	---	---	**4E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0192H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	2.71E-04	---	NA	---	---	2.33E-05	5.80E-05		**1E-09**
1,3-BUTADIENE	106-99-0	5.00E-02	N	1.23E-03	---	2.00E+00	**6E-04**	---	1.06E-04	3.00E-05		**3E-09**
1,4-DIOXANE	123-91-1	7.50E-02	N	1.85E-03	---	3.00E+01	**6E-05**	---	1.59E-04	5.00E-06		**8E-10**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	1.85E-04	---	2.00E-01	**9E-04**	---	1.59E-05	1.60E-05		**3E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	1.23E-02	---	2.00E+00	**6E-03**	---	1.06E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.30E-01	Y	3.21E-03	---	6.00E+01	**5E-05**	---	2.75E-04	-		---
1,2-DIBROMOETHANE	106-93-4	3.50E-02	N	8.63E-04	---	9.00E+00	**1E-04**	---	7.40E-05	6.00E-04		**4E-08**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	1.90E-03	---	7.00E+00	**3E-04**	---	1.63E-04	2.60E-05		**4E-09**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	2.34E-03	---	4.00E+00	**6E-04**	---	2.01E-04	3.70E-06		**7E-10**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	1.48E-03	---	6.00E+01	**2E-05**	---	1.27E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	1.36E-03	---	8.00E+02	**2E-06**	---	1.16E-04	1.10E-05		**1E-09**
BENZENE	71-43-2	1.10E+00	Y	2.71E-02	---	3.00E+01	**9E-04**	---	2.33E-03	7.80E-06		**2E-08**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	2.22E-03	---	1.00E+00	**2E-03**	---	1.90E-04	4.90E-05		**9E-09**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	3.21E-03	---	NA	---	---	2.75E-04	3.70E-05		**1E-08**
BROMOMETHANE	74-83-9	7.00E-01	N	1.73E-02	---	5.00E+00	**3E-03**	---	1.48E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	1.16E-02	---	1.00E+02	**1E-04**	---	9.94E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	1.30E+00	Y	3.21E-02	---	9.77E+01	**3E-04**	---	2.75E-03	2.30E-05		**6E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.00E-01	Y	4.93E-03	---	1.00E+03	**5E-06**	---	4.23E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	1.73E-02	---	NA	---	---	1.48E-03	2.20E-05		**3E-08**
ISOPROPYL ALCOHOL	67-63-0	1.20E+01	Y	2.96E-01	---	2.00E+02	**1E-03**	---	2.54E-02	-		---
M,P-XYLENE	108-38-3	6.00E-01	Y	1.48E-02	---	1.00E+02	**1E-04**	---	1.27E-03	-		---
METHYLENE CHLORIDE	75-09-2	2.25E-01	N	5.55E-03	---	6.00E+02	**9E-06**	---	4.76E-04	1.00E-08	M	**3E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.20E-01	Y	5.43E-03	---	1.00E+02	**5E-05**	---	4.65E-04	-		---
TETRACHLOROETHENE	127-18-4	1.60E+01	Y	3.95E-01	---	4.00E+01	**1E-02**	---	3.38E-02	2.60E-07		**9E-09**
TRICHLOROETHENE	79-01-6	4.30E-01	Y	1.06E-02	---	2.00E+00	**5E-03**	---	9.09E-04	4.10E-06	M	**8E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.50E-03	N	2.10E-04	---	8.00E+01	**3E-06**	---	1.80E-05	4.40E-06	M	**4E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0192H**	**Total Inhalation**	**3E-02**	**0E+00**	**2E-07**
		Based on NDs only	**1E-02**	**0E+00**	**1E-07**
		Based on Detects only	**2E-02**	**All ND**	**1E-07**
		Site-related only	**2E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0192H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.25E-01	1.59E-03	9.51E-04	NA	NA	1.0E-08		2E-11	1E-11	---	---	**3E-11**
TRICHLOROETHENE	79-01-6	4.30E-01	3.03E-03	1.82E-03	NA	NA	1.0E-06	kidney	3E-09	2E-09	---	---	**5E-09**
TRICHLOROETHENE	79-01-6	4.30E-01	9.09E-04		NA		3.1E-06	NHL+liver	3E-09		---		**3E-09**
VINYL CHLORIDE	75-01-4	8.50E-03	5.99E-05	3.59E-05	NA	NA	4.4E-06		3E-10	2E-10	---	---	**4E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0193H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	1.69E-03	---	NA	---	---	1.45E-04	5.80E-05		**8E-09**
1,3-BUTADIENE	106-99-0	2.22E+00	N	5.46E-02	---	2.00E+00	**3E-02**	---	4.68E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	3.61E-01	N	8.89E-03	---	3.00E+01	**3E-04**	---	7.62E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	2.01E-03	---	2.00E-01	**1E-02**	---	1.72E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	5.75E-02	---	2.00E+00	**3E-02**	---	4.93E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	1.21E-02	---	6.00E+01	**2E-04**	---	1.04E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	1.90E-03	---	9.00E+00	**2E-04**	---	1.63E-04	6.00E-04		**1E-07**
1,2-DICHLOROETHANE	107-06-2	1.02E-01	Y	2.52E-03	---	7.00E+00	**4E-04**	---	2.16E-04	2.60E-05		**6E-09**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	1.71E-03	---	4.00E+00	**4E-04**	---	1.47E-04	3.70E-06		**5E-10**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	1.21E-02	---	6.00E+01	**2E-04**	---	1.04E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	1.48E-03	---	8.00E+02	**2E-06**	---	1.27E-04	1.10E-05		**1E-09**
BENZENE	71-43-2	4.89E-01	Y	1.21E-02	---	3.00E+01	**4E-04**	---	1.03E-03	7.80E-06		**8E-09**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	1.28E-02	---	1.00E+00	**1E-02**	---	1.10E-03	4.90E-05		**5E-08**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	1.65E-02	---	NA	**---**	---	1.42E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	3.88E-01	N	9.57E-03	---	5.00E+00	**2E-03**	---	8.20E-04	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.74E-01	Y	1.42E-02	---	1.00E+02	**1E-04**	---	1.21E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	1.55E+00	Y	3.82E-02	---	9.77E+01	**4E-04**	---	3.28E-03	2.30E-05		**8E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.86E-01	Y	4.59E-03	---	1.00E+03	**5E-06**	---	3.93E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	8.30E-02	---	NA	**---**	---	7.11E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	1.15E+01	Y	2.84E-01	---	2.00E+02	**1E-03**	---	2.43E-02	-		**---**
M,P-XYLENE	108-38-3	6.76E-01	Y	1.67E-02	---	1.00E+02	**2E-04**	---	1.43E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	6.74E-01	Y	1.66E-02	---	6.00E+02	**3E-05**	---	1.43E-03	1.00E-08	M	**8E-11**
NAPHTHALENE	91-20-3	1.65E+00	N	4.07E-02	---	3.00E+00	**1E-02**	---	3.49E-03	3.40E-05		**1E-07**
O-XYLENE	95-47-6	4.34E-01	N	1.07E-02	---	1.00E+02	**1E-04**	---	9.17E-04	-		**---**
TETRACHLOROETHENE	127-18-4	3.82E+00	Y	9.42E-02	---	4.00E+01	**2E-03**	---	8.08E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	7.18E-01	Y	1.77E-02	---	2.00E+00	**9E-03**	---	1.52E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	8.68E-04	---	2.00E+02	**4E-06**	---	7.44E-05	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	6.30E-04	---	8.00E+01	**8E-06**	---	5.40E-05	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0193H**	**Total Inhalation**	**1E-01**	**0E+00**	**8E-07**
		Based on NDs only	**1E-01**	**0E+00**	**6E-07**
		Based on Detects only	**1E-02**	**All ND**	**1E-07**
		Site-related only	**1E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0193H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.74E-01	4.75E-03	2.85E-03	NA	NA	1.0E-08		5E-11	3E-11	---	---	**8E-11**
TRICHLOROETHENE	79-01-6	7.18E-01	5.06E-03	3.04E-03	NA	NA	1.0E-06	kidney	5E-09	3E-09	---	---	**8E-09**
TRICHLOROETHENE	79-01-6	7.18E-01	1.52E-03		NA		3.1E-06	NHL+liver	5E-09		---		**5E-09**
VINYL CHLORIDE	75-01-4	2.56E-02	1.80E-04	1.08E-04	NA	NA	4.4E-06		8E-10	5E-10	---	---	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0194H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	1.69E-03	---	NA	---	---	1.45E-04	5.80E-05		**8E-09**
1,3-BUTADIENE	106-99-0	2.22E+00	N	5.46E-02	---	2.00E+00	**3E-02**	---	4.68E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	3.61E-01	N	8.89E-03	---	3.00E+01	**3E-04**	---	7.62E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	2.01E-03	---	2.00E-01	**1E-02**	---	1.72E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	5.75E-02	---	2.00E+00	**3E-02**	---	4.93E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	1.21E-02	---	6.00E+01	**2E-04**	---	1.04E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	1.90E-03	---	9.00E+00	**2E-04**	---	1.63E-04	6.00E-04		**1E-07**
1,2-DICHLOROETHANE	107-06-2	1.22E-01	Y	3.01E-03	---	7.00E+00	**4E-04**	---	2.58E-04	2.60E-05		**7E-09**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	1.71E-03	---	4.00E+00	**4E-04**	---	1.47E-04	3.70E-06		**5E-10**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	1.21E-02	---	6.00E+01	**2E-04**	---	1.04E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	1.48E-03	---	8.00E+02	**2E-06**	---	1.27E-04	1.10E-05		**1E-09**
BENZENE	71-43-2	5.69E-01	Y	1.40E-02	---	3.00E+01	**5E-04**	---	1.20E-03	7.80E-06		**9E-09**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	1.28E-02	---	1.00E+00	**1E-02**	---	1.10E-03	4.90E-05		**5E-08**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	1.65E-02	---	NA	---	---	1.42E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	3.88E-01	N	9.57E-03	---	5.00E+00	**2E-03**	---	8.20E-04	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.46E-01	Y	1.35E-02	---	1.00E+02	**1E-04**	---	1.15E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	7.40E-01	Y	1.83E-02	---	9.77E+01	**2E-04**	---	1.56E-03	2.30E-05		**4E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	4.23E-01	Y	1.04E-02	---	1.00E+03	**1E-05**	---	8.94E-04	2.50E-06		**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	8.30E-02	---	NA	---	---	7.11E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	9.27E+00	Y	2.29E-01	---	2.00E+02	**1E-03**	---	1.96E-02	-		**---**
M,P-XYLENE	108-38-3	1.14E+00	Y	2.81E-02	---	1.00E+02	**3E-04**	---	2.41E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	6.67E-01	Y	1.65E-02	---	6.00E+02	**3E-05**	---	1.41E-03	1.00E-08	M	**8E-11**
NAPHTHALENE	91-20-3	1.65E+00	N	4.07E-02	---	3.00E+00	**1E-02**	---	3.49E-03	3.40E-05		**1E-07**
O-XYLENE	95-47-6	4.34E-01	N	1.07E-02	---	1.00E+02	**1E-04**	---	9.17E-04	-		**---**
TETRACHLOROETHENE	127-18-4	1.06E+01	Y	2.61E-01	---	4.00E+01	**7E-03**	---	2.24E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	7.18E-01	Y	1.77E-02	---	2.00E+00	**9E-03**	---	1.52E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	8.68E-04	---	2.00E+02	**4E-06**	---	7.44E-05	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	6.30E-04	---	8.00E+01	**8E-06**	---	5.40E-05	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0194H**	**Total Inhalation**	**1E-01**	**0E+00**	**7E-07**
		Based on NDs only	**1E-01**	**0E+00**	**6E-07**
		Based on Detects only	**2E-02**	**All ND**	**8E-08**
		Site-related only	**2E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0194H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.67E-01	4.70E-03	2.82E-03	NA	NA	1.0E-08		5E-11	3E-11	---	---	**8E-11**
TRICHLOROETHENE	79-01-6	7.18E-01	5.06E-03	3.04E-03	NA	NA	1.0E-06	kidney	5E-09	3E-09	---	---	**8E-09**
TRICHLOROETHENE	79-01-6	7.18E-01	1.52E-03		NA		3.1E-06	NHL+liver	5E-09		---		**5E-09**
VINYL CHLORIDE	75-01-4	2.56E-02	1.80E-04	1.08E-04	NA	NA	4.4E-06		8E-10	5E-10	---	---	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0195H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	1.69E-03	---	NA	---	---	1.45E-04	5.80E-05		**8E-09**
1,3-BUTADIENE	106-99-0	2.22E+00	N	5.46E-02	---	2.00E+00	**3E-02**	---	4.68E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	3.61E-01	N	8.89E-03	---	3.00E+01	**3E-04**	---	7.62E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	2.01E-03	---	2.00E-01	**1E-02**	---	1.72E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	5.75E-02	---	2.00E+00	**3E-02**	---	4.93E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.35E+00	Y	1.32E-01	---	6.00E+01	**2E-03**	---	1.13E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	1.90E-03	---	9.00E+00	**2E-04**	---	1.63E-04	6.00E-04		**1E-07**
1,2-DICHLOROETHANE	107-06-2	1.24E-01	Y	3.06E-03	---	7.00E+00	**4E-04**	---	2.62E-04	2.60E-05		**7E-09**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	1.71E-03	---	4.00E+00	**4E-04**	---	1.47E-04	3.70E-06		**5E-10**
1,3,5-Trimethylbenzene	108-67-8	1.59E+00	Y	3.92E-02	---	6.00E+01	**7E-04**	---	3.36E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	1.48E-03	---	8.00E+02	**2E-06**	---	1.27E-04	1.10E-05		**1E-09**
BENZENE	71-43-2	6.26E-01	Y	1.54E-02	---	3.00E+01	**5E-04**	---	1.32E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	1.28E-02	---	1.00E+00	**1E-02**	---	1.10E-03	4.90E-05		**5E-08**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	1.65E-02	---	NA	**---**	---	1.42E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	3.88E-01	N	9.57E-03	---	5.00E+00	**2E-03**	---	8.20E-04	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.96E-01	Y	1.22E-02	---	1.00E+02	**1E-04**	---	1.05E-03	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	5.55E-01	Y	1.37E-02	---	9.77E+01	**1E-04**	---	1.17E-03	2.30E-05		**3E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	---	---	-		**---**
ETHYLBENZENE	100-41-4	7.33E-01	Y	1.81E-02	---	1.00E+03	**2E-05**	---	1.55E-03	2.50E-06		**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	8.30E-02	---	NA	**---**	---	7.11E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	2.05E+01	Y	5.06E-01	---	2.00E+02	**3E-03**	---	4.33E-02	-		**---**
M,P-XYLENE	108-38-3	2.76E+00	Y	6.81E-02	---	1.00E+02	**7E-04**	---	5.84E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	5.69E-01	Y	1.40E-02	---	6.00E+02	**2E-05**	---	1.20E-03	1.00E-08	M	**6E-11**
NAPHTHALENE	91-20-3	1.65E+00	N	4.07E-02	---	3.00E+00	**1E-02**	---	3.49E-03	3.40E-05		**1E-07**
O-XYLENE	95-47-6	1.44E+00	Y	3.55E-02	---	1.00E+02	**4E-04**	---	3.04E-03	-		**---**
TETRACHLOROETHENE	127-18-4	2.27E+00	Y	5.60E-02	---	4.00E+01	**1E-03**	---	4.80E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	5.95E-02	Y	1.47E-03	---	2.00E+00	**7E-04**	---	1.26E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	3.52E-02	N	8.68E-04	---	2.00E+02	**4E-06**	---	7.44E-05	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	6.30E-04	---	8.00E+01	**8E-06**	---	5.40E-05	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0195H**	**Total Inhalation**	**1E-01**	**0E+00**	**7E-07**
		Based on NDs only	**1E-01**	**0E+00**	**6E-07**
		Based on Detects only	**1E-02**	**All ND**	**6E-08**
		Site-related only	**2E-03**	**0E+00**	**7E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0195H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.69E-01	4.01E-03	2.41E-03	NA	NA	1.0E-08		4E-11	2E-11	---	---	**6E-11**
TRICHLOROETHENE	79-01-6	5.95E-02	4.19E-04	2.52E-04	NA	NA	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	5.95E-02	1.26E-04		NA		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	2.56E-02	1.80E-04	1.08E-04	NA	NA	4.4E-06		8E-10	5E-10	---	---	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0197H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.50E-02	N	6.17E-04	---	NA	---	---	5.29E-05	5.80E-05		**3E-09**
1,3-BUTADIENE	106-99-0	5.00E-02	N	1.23E-03	---	2.00E+00	**6E-04**	---	1.06E-04	3.00E-05		**3E-09**
1,4-DIOXANE	123-91-1	8.50E-02	N	2.10E-03	---	3.00E+01	**7E-05**	---	1.80E-04	5.00E-06		**9E-10**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	2.96E-04	---	2.00E-01	**1E-03**	---	2.54E-05	1.60E-05		**4E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	1.23E-02	---	2.00E+00	**6E-03**	---	1.06E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.20E-01	Y	5.43E-03	---	6.00E+01	**9E-05**	---	4.65E-04	-		---
1,2-DIBROMOETHANE	106-93-4	4.45E-02	N	1.10E-03	---	9.00E+00	**1E-04**	---	9.41E-05	6.00E-04		**6E-08**
1,2-DICHLOROETHANE	107-06-2	8.50E-02	Y	2.10E-03	---	7.00E+00	**3E-04**	---	1.80E-04	2.60E-05		**5E-09**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	2.47E-03	---	4.00E+00	**6E-04**	---	2.11E-04	3.70E-06		**8E-10**
1,3,5-Trimethylbenzene	108-67-8	8.50E-02	N	2.10E-03	---	6.00E+01	**3E-05**	---	1.80E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	2.10E-01	Y	5.18E-03	---	8.00E+02	**6E-06**	---	4.44E-04	1.10E-05		**5E-09**
BENZENE	71-43-2	4.30E-01	Y	1.06E-02	---	3.00E+01	**4E-04**	---	9.09E-04	7.80E-06		**7E-09**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	2.71E-03	---	1.00E+00	**3E-03**	---	2.33E-04	4.90E-05		**1E-08**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	2.71E-03	---	NA	---	---	2.33E-04	3.70E-05		**9E-09**
BROMOMETHANE	74-83-9	6.00E-01	N	1.48E-02	---	5.00E+00	**3E-03**	---	1.27E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	1.09E-02	---	1.00E+02	**1E-04**	---	9.30E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	1.10E+00	Y	2.71E-02	---	9.77E+01	**3E-04**	---	2.33E-03	2.30E-05		**5E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	3.50E-01	Y	8.63E-03	---	1.00E+03	**9E-06**	---	7.40E-04	2.50E-06		**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.25E-01	N	1.05E-02	---	NA	---	---	8.99E-04	2.20E-05		**2E-08**
ISOPROPYL ALCOHOL	67-63-0	2.90E+01	Y	7.15E-01	---	2.00E+02	**4E-03**	---	6.13E-02	-		---
M,P-XYLENE	108-38-3	1.20E+00	Y	2.96E-02	---	1.00E+02	**3E-04**	---	2.54E-03	-		---
METHYLENE CHLORIDE	75-09-2	4.80E-01	Y	1.18E-02	---	6.00E+02	**2E-05**	---	1.01E-03	1.00E-08	M	**5E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.10E-01	Y	7.65E-03	---	1.00E+02	**8E-05**	---	6.55E-04	-		---
TETRACHLOROETHENE	127-18-4	2.30E+01	Y	5.67E-01	---	4.00E+01	**1E-02**	---	4.86E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	5.80E+00	Y	1.43E-01	---	2.00E+00	**7E-02**	---	1.23E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	3.95E-03	N	9.74E-05	---	8.00E+01	**1E-06**	---	8.35E-06	4.40E-06	M	**2E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0197H**	**Total Inhalation**	**1E-01**	**0E+00**	**3E-07**
		Based on NDs only	**1E-02**	**0E+00**	**1E-07**
		Based on Detects only	**9E-02**	**All ND**	**2E-07**
		Site-related only	**9E-02**	**0E+00**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0197H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.80E-01	3.38E-03	2.03E-03	NA	NA	1.0E-08		3E-11	2E-11	---	---	**5E-11**
TRICHLOROETHENE	79-01-6	5.80E+00	4.09E-02	2.45E-02	NA	NA	1.0E-06	kidney	4E-08	2E-08	---	---	**7E-08**
TRICHLOROETHENE	79-01-6	5.80E+00	1.23E-02		NA		3.1E-06	NHL+liver	4E-08		---		**4E-08**
VINYL CHLORIDE	75-01-4	3.95E-03	2.78E-05	1.67E-05	NA	NA	4.4E-06		1E-10	7E-11	---	---	**2E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0225H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	1.69E-03	---	NA	---	---	1.45E-04	5.80E-05		**8E-09**
1,3-BUTADIENE	106-99-0	2.22E+00	N	5.46E-02	---	2.00E+00	**3E-02**	---	4.68E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	3.61E-01	N	8.89E-03	---	3.00E+01	**3E-04**	---	7.62E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	2.01E-03	---	2.00E-01	**1E-02**	---	1.72E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	5.75E-02	---	2.00E+00	**3E-02**	---	4.93E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	1.21E-02	---	6.00E+01	**2E-04**	---	1.04E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	1.90E-03	---	9.00E+00	**2E-04**	---	1.63E-04	6.00E-04		**1E-07**
1,2-DICHLOROETHANE	107-06-2	3.26E-01	Y	8.04E-03	---	7.00E+00	**1E-03**	---	6.89E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	1.71E-03	---	4.00E+00	**4E-04**	---	1.47E-04	3.70E-06		**5E-10**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	1.21E-02	---	6.00E+01	**2E-04**	---	1.04E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.80E-01	Y	2.42E-02	---	8.00E+02	**3E-05**	---	2.07E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	5.21E-01	Y	1.29E-02	---	3.00E+01	**4E-04**	---	1.10E-03	7.80E-06		**9E-09**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	1.28E-02	---	1.00E+00	**1E-02**	---	1.10E-03	4.90E-05		**5E-08**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	1.65E-02	---	NA	**---**	---	1.42E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	3.88E-01	N	9.57E-03	---	5.00E+00	**2E-03**	---	8.20E-04	-		**---**
CARBON TETRACHLORIDE	56-23-5	6.87E-01	Y	1.69E-02	---	1.00E+02	**2E-04**	---	1.45E-03	6.00E-06		**9E-09**
CHLOROFORM	67-66-3	3.59E-01	Y	8.86E-03	---	9.77E+01	**9E-05**	---	7.59E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	---	---	-		**---**
ETHYLBENZENE	100-41-4	6.29E-01	Y	1.55E-02	---	1.00E+03	**2E-05**	---	1.33E-03	2.50E-06		**3E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	8.30E-02	---	NA	**---**	---	7.11E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	1.24E+01	Y	3.06E-01	---	2.00E+02	**2E-03**	---	2.62E-02	-		**---**
M,P-XYLENE	108-38-3	2.17E+00	Y	5.35E-02	---	1.00E+02	**5E-04**	---	4.59E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	7.43E-01	Y	1.83E-02	---	6.00E+02	**3E-05**	---	1.57E-03	1.00E-08	M	**8E-11**
NAPHTHALENE	91-20-3	1.65E+00	N	4.07E-02	---	3.00E+00	**1E-02**	---	3.49E-03	3.40E-05		**1E-07**
O-XYLENE	95-47-6	7.24E-01	Y	1.79E-02	---	1.00E+02	**2E-04**	---	1.53E-03	-		**---**
TETRACHLOROETHENE	127-18-4	2.57E-01	Y	6.34E-03	---	4.00E+01	**2E-04**	---	5.43E-04	2.60E-07		**1E-10**
TRICHLOROETHENE	79-01-6	6.54E-02	Y	1.61E-03	---	2.00E+00	**8E-04**	---	1.38E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	3.52E-02	N	8.68E-04	---	2.00E+02	**4E-06**	---	7.44E-05	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	6.30E-04	---	8.00E+01	**8E-06**	---	5.40E-05	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0225H**	**Total Inhalation**	**1E-01**	**0E+00**	**7E-07**
		Based on NDs only	**1E-01**	**0E+00**	**6E-07**
		Based on Detects only	**5E-03**	**All ND**	**8E-08**
		Site-related only	**1E-03**	**0E+00**	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0225H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.43E-01	5.24E-03	3.14E-03	NA	NA	1.0E-08		5E-11	3E-11	---	---	**8E-11**
TRICHLOROETHENE	79-01-6	6.54E-02	4.61E-04	2.77E-04	NA	NA	1.0E-06	kidney	5E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	6.54E-02	1.38E-04		NA		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	2.56E-02	1.80E-04	1.08E-04	NA	NA	4.4E-06		8E-10	5E-10	---	---	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0230H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	2.59E-04	---	NA	---	---	2.22E-05	5.80E-05		**1E-09**
1,3-BUTADIENE	106-99-0	4.95E-02	N	1.22E-03	---	2.00E+00	**6E-04**	---	1.05E-04	3.00E-05		**3E-09**
1,4-DIOXANE	123-91-1	7.00E-02	N	1.73E-03	---	3.00E+01	**6E-05**	---	1.48E-04	5.00E-06		**7E-10**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	1.73E-04	---	2.00E-01	**9E-04**	---	1.48E-05	1.60E-05		**2E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	4.85E-01	N	1.20E-02	---	2.00E+00	**6E-03**	---	1.03E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.90E-01	Y	4.69E-03	---	6.00E+01	**8E-05**	---	4.02E-04	-		---
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	8.14E-04	---	9.00E+00	**9E-05**	---	6.98E-05	6.00E-04		**4E-08**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	3.45E-03	---	7.00E+00	**5E-04**	---	2.96E-04	2.60E-05		**8E-09**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	2.22E-03	---	4.00E+00	**6E-04**	---	1.90E-04	3.70E-06		**7E-10**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	1.48E-03	---	6.00E+01	**2E-05**	---	1.27E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	1.23E-03	---	8.00E+02	**2E-06**	---	1.06E-04	1.10E-05		**1E-09**
BENZENE	71-43-2	5.30E-01	Y	1.31E-02	---	3.00E+01	**4E-04**	---	1.12E-03	7.80E-06		**9E-09**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	2.10E-03	---	1.00E+00	**2E-03**	---	1.80E-04	4.90E-05		**9E-09**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	3.08E-03	---	NA	---	---	2.64E-04	3.70E-05		**1E-08**
BROMOMETHANE	74-83-9	6.50E-01	N	1.60E-02	---	5.00E+00	**3E-03**	---	1.37E-03	-		---
CARBON TETRACHLORIDE	56-23-5	3.90E-01	Y	9.62E-03	---	1.00E+02	**1E-04**	---	8.25E-04	6.00E-06		**5E-09**
CHLOROFORM	67-66-3	9.60E-01	Y	2.37E-02	---	9.77E+01	**2E-04**	---	2.03E-03	2.30E-05		**5E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.50E-01	Y	3.70E-03	---	1.00E+03	**4E-06**	---	3.17E-04	2.50E-06		**8E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	1.60E-02	---	NA	---	---	1.37E-03	2.20E-05		**3E-08**
ISOPROPYL ALCOHOL	67-63-0	5.50E+01	Y	1.36E+00	---	2.00E+02	**7E-03**	---	1.16E-01	-		---
M,P-XYLENE	108-38-3	5.20E-01	Y	1.28E-02	---	1.00E+02	**1E-04**	---	1.10E-03	-		---
METHYLENE CHLORIDE	75-09-2	2.75E-01	N	6.78E-03	---	6.00E+02	**1E-05**	---	5.81E-04	1.00E-08	M	**3E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.00E-01	Y	4.93E-03	---	1.00E+02	**5E-05**	---	4.23E-04	-		---
TETRACHLOROETHENE	127-18-4	4.80E-02	Y	1.18E-03	---	4.00E+01	**3E-05**	---	1.01E-04	2.60E-07		**3E-11**
TRICHLOROETHENE	79-01-6	1.65E-02	N	4.07E-04	---	2.00E+00	**2E-04**	---	3.49E-05	4.10E-06	M	**3E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.00E-03	N	1.97E-04	---	8.00E+01	**2E-06**	---	1.69E-05	4.40E-06	M	**4E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0230H**	**Total Inhalation**	**2E-02**	**0E+00**	**2E-07**
		Based on NDs only	**1E-02**	**0E+00**	**1E-07**
		Based on Detects only	**8E-03**	**All ND**	**7E-08**
		Site-related only	**3E-04**	**0E+00**	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0230H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.75E-01	1.94E-03	1.16E-03	NA	NA	1.0E-08		2E-11	1E-11	---	---	**3E-11**
TRICHLOROETHENE	79-01-6	1.65E-02	1.16E-04	6.98E-05	NA	NA	1.0E-06	kidney	1E-10	7E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	1.65E-02	3.49E-05		NA		3.1E-06	NHL+liver	1E-10		---		**1E-10**
VINYL CHLORIDE	75-01-4	8.00E-03	5.64E-05	3.38E-05	NA	NA	4.4E-06		2E-10	1E-10	---	---	**4E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0255H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	1.69E-03	---	NA	---	---	1.45E-04	5.80E-05		**8E-09**
1,3-BUTADIENE	106-99-0	2.22E+00	N	5.46E-02	---	2.00E+00	**3E-02**	---	4.68E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	3.61E-01	N	8.89E-03	---	3.00E+01	**3E-04**	---	7.62E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	2.01E-03	---	2.00E-01	**1E-02**	---	1.72E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	5.75E-02	---	2.00E+00	**3E-02**	---	4.93E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	1.21E-02	---	6.00E+01	**2E-04**	---	1.04E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	1.90E-03	---	9.00E+00	**2E-04**	---	1.63E-04	6.00E-04		**1E-07**
1,2-DICHLOROETHANE	107-06-2	1.41E-01	Y	3.48E-03	---	7.00E+00	**5E-04**	---	2.98E-04	2.60E-05		**8E-09**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	1.71E-03	---	4.00E+00	**4E-04**	---	1.47E-04	3.70E-06		**5E-10**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	1.21E-02	---	6.00E+01	**2E-04**	---	1.04E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.77E-02	Y	1.42E-03	---	8.00E+02	**2E-06**	---	1.22E-04	1.10E-05		**1E-09**
BENZENE	71-43-2	6.71E-01	Y	1.66E-02	---	3.00E+01	**6E-04**	---	1.42E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	1.28E-02	---	1.00E+00	**1E-02**	---	1.10E-03	4.90E-05		**5E-08**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	1.65E-02	---	NA	---	---	1.42E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	3.88E-01	N	9.57E-03	---	5.00E+00	**2E-03**	---	8.20E-04	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.87E-01	Y	1.20E-02	---	1.00E+02	**1E-04**	---	1.03E-03	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	1.47E+00	Y	3.63E-02	---	9.77E+01	**4E-04**	---	3.11E-03	2.30E-05		**7E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.02E-01	Y	4.98E-03	---	1.00E+03	**5E-06**	---	4.27E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	8.30E-02	---	NA	---	---	7.11E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	2.15E+00	Y	5.30E-02	---	2.00E+02	**3E-04**	---	4.55E-03	-		**---**
M,P-XYLENE	108-38-3	8.65E-01	N	2.13E-02	---	1.00E+02	**2E-04**	---	1.83E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	8.82E-01	Y	2.18E-02	---	6.00E+02	**4E-05**	---	1.86E-03	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	4.07E-02	---	3.00E+00	**1E-02**	---	3.49E-03	3.40E-05		**1E-07**
O-XYLENE	95-47-6	4.34E-01	N	1.07E-02	---	1.00E+02	**1E-04**	---	9.17E-04	-		**---**
TETRACHLOROETHENE	127-18-4	2.69E+00	Y	6.64E-02	---	4.00E+01	**2E-03**	---	5.69E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	1.91E-01	Y	4.71E-03	---	2.00E+00	**2E-03**	---	4.04E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	3.52E-02	N	8.68E-04	---	2.00E+02	**4E-06**	---	7.44E-05	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	6.30E-04	---	8.00E+01	**8E-06**	---	5.40E-05	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0255H**	**Total Inhalation**	**1E-01**	**0E+00**	**7E-07**
		Based on NDs only	**1E-01**	**0E+00**	**6E-07**
		Based on Detects only	**6E-03**	**All ND**	**1E-07**
		Site-related only	**4E-03**	**0E+00**	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0255H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.82E-01	6.22E-03	3.73E-03	NA	NA	1.0E-08		6E-11	4E-11	---	---	**1E-10**
TRICHLOROETHENE	79-01-6	1.91E-01	1.35E-03	8.08E-04	NA	NA	1.0E-06	kidney	1E-09	8E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	1.91E-01	4.04E-04		NA		3.1E-06	NHL+liver	1E-09		---		**1E-09**
VINYL CHLORIDE	75-01-4	2.56E-02	1.80E-04	1.08E-04	NA	NA	4.4E-06		8E-10	5E-10	---	---	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0256H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	1.69E-03	---	NA	---	---	1.45E-04	5.80E-05		**8E-09**
1,3-BUTADIENE	106-99-0	2.22E+00	N	5.46E-02	---	2.00E+00	**3E-02**	---	4.68E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	3.61E-01	N	8.89E-03	---	3.00E+01	**3E-04**	---	7.62E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	2.01E-03	---	2.00E-01	**1E-02**	---	1.72E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	5.75E-02	---	2.00E+00	**3E-02**	---	4.93E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	1.21E-02	---	6.00E+01	**2E-04**	---	1.04E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	1.90E-03	---	9.00E+00	**2E-04**	---	1.63E-04	6.00E-04		**1E-07**
1,2-DICHLOROETHANE	107-06-2	1.04E-01	Y	2.57E-03	---	7.00E+00	**4E-04**	---	2.20E-04	2.60E-05		**6E-09**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	1.71E-03	---	4.00E+00	**4E-04**	---	1.47E-04	3.70E-06		**5E-10**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	1.21E-02	---	6.00E+01	**2E-04**	---	1.04E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	6.91E-02	Y	1.70E-03	---	8.00E+02	**2E-06**	---	1.46E-04	1.10E-05		**2E-09**
BENZENE	71-43-2	5.72E-01	Y	1.41E-02	---	3.00E+01	**5E-04**	---	1.21E-03	7.80E-06		**9E-09**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	1.28E-02	---	1.00E+00	**1E-02**	---	1.10E-03	4.90E-05		**5E-08**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	1.65E-02	---	NA	---	---	1.42E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	3.88E-01	N	9.57E-03	---	5.00E+00	**2E-03**	---	8.20E-04	-		---
CARBON TETRACHLORIDE	56-23-5	4.86E-01	Y	1.20E-02	---	1.00E+02	**1E-04**	---	1.03E-03	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	3.49E-01	Y	8.61E-03	---	9.77E+01	**9E-05**	---	7.38E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.68E-01	Y	4.14E-03	---	1.00E+03	**4E-06**	---	3.55E-04	2.50E-06		**9E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	8.30E-02	---	NA	---	---	7.11E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	2.07E+00	Y	5.11E-02	---	2.00E+02	**3E-04**	---	4.38E-03	-		---
M,P-XYLENE	108-38-3	6.85E-01	Y	1.69E-02	---	1.00E+02	**2E-04**	---	1.45E-03	-		---
METHYLENE CHLORIDE	75-09-2	6.77E-01	Y	1.67E-02	---	6.00E+02	**3E-05**	---	1.43E-03	1.00E-08	M	**8E-11**
NAPHTHALENE	91-20-3	1.65E+00	N	4.07E-02	---	3.00E+00	**1E-02**	---	3.49E-03	3.40E-05		**1E-07**
O-XYLENE	95-47-6	4.34E-01	N	1.07E-02	---	1.00E+02	**1E-04**	---	9.17E-04	-		---
TETRACHLOROETHENE	127-18-4	1.84E-01	Y	4.54E-03	---	4.00E+01	**1E-04**	---	3.89E-04	2.60E-07		**1E-10**
TRICHLOROETHENE	79-01-6	6.16E-02	Y	1.52E-03	---	2.00E+00	**8E-04**	---	1.30E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	3.52E-02	N	8.68E-04	---	2.00E+02	**4E-06**	---	7.44E-05	-		---
VINYL CHLORIDE	75-01-4	2.56E-02	N	6.30E-04	---	8.00E+01	**8E-06**	---	5.40E-05	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0256H**	**Total Inhalation**	**1E-01**	**0E+00**	**7E-07**
		Based on NDs only	**1E-01**	**0E+00**	**6E-07**
		Based on Detects only	**2E-03**	**All ND**	**4E-08**
		Site-related only	**1E-03**	**0E+00**	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0256H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.77E-01	4.77E-03	2.86E-03	NA	NA	1.0E-08		5E-11	3E-11	---	---	**8E-11**
TRICHLOROETHENE	79-01-6	6.16E-02	4.34E-04	2.60E-04	NA	NA	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	6.16E-02	1.30E-04		NA		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	2.56E-02	1.80E-04	1.08E-04	NA	NA	4.4E-06		8E-10	5E-10	---	---	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0263H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	1.69E-03	---	NA	---	---	1.45E-04	5.80E-05		**8E-09**
1,3-BUTADIENE	106-99-0	2.22E+01	N	5.46E-01	---	2.00E+00	**3E-01**	---	4.68E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	8.89E-03	---	3.00E+01	**3E-04**	---	7.62E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	2.01E-03	---	2.00E-01	**1E-02**	---	1.72E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	5.75E-02	---	2.00E+00	**3E-02**	---	4.93E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	6.53E-01	Y	1.61E-02	---	6.00E+01	**3E-04**	---	1.38E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	1.90E-03	---	9.00E+00	**2E-04**	---	1.63E-04	6.00E-04		**1E-07**
1,2-DICHLOROETHANE	107-06-2	2.88E-01	Y	7.10E-03	---	7.00E+00	**1E-03**	---	6.09E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	1.71E-03	---	4.00E+00	**4E-04**	---	1.47E-04	3.70E-06		**5E-10**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	1.21E-02	---	6.00E+01	**2E-04**	---	1.04E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	6.13E-02	Y	1.51E-03	---	8.00E+02	**2E-06**	---	1.30E-04	1.10E-05		**1E-09**
BENZENE	71-43-2	1.24E+00	Y	3.06E-02	---	3.00E+01	**1E-03**	---	2.62E-03	7.80E-06		**2E-08**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	1.28E-02	---	1.00E+00	**1E-02**	---	1.10E-03	4.90E-05		**5E-08**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	1.65E-02	---	NA	---	---	1.42E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	3.88E+00	N	9.57E-02	---	5.00E+00	**2E-02**	---	8.20E-03	-		---
CARBON TETRACHLORIDE	56-23-5	5.94E-01	Y	1.47E-02	---	1.00E+02	**1E-04**	---	1.26E-03	6.00E-06		**8E-09**
CHLOROFORM	67-66-3	4.87E-02	N	1.20E-03	---	9.77E+01	**1E-05**	---	1.03E-04	2.30E-05		**2E-09**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	6.63E-01	Y	1.64E-02	---	1.00E+03	**2E-05**	---	1.40E-03	2.50E-06		**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	8.30E-02	---	NA	---	---	7.11E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	1.54E+01	N	3.79E-01	---	2.00E+02	**2E-03**	---	3.25E-02	-		---
M,P-XYLENE	108-38-3	1.63E+00	Y	4.02E-02	---	1.00E+02	**4E-04**	---	3.45E-03	-		---
METHYLENE CHLORIDE	75-09-2	3.47E+00	N	8.56E-02	---	6.00E+02	**1E-04**	---	7.34E-03	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	4.07E-02	---	3.00E+00	**1E-02**	---	3.49E-03	3.40E-05		**1E-07**
O-XYLENE	95-47-6	6.16E-01	Y	1.52E-02	---	1.00E+02	**2E-04**	---	1.30E-03	-		---
TETRACHLOROETHENE	127-18-4	1.26E+01	Y	3.11E-01	---	4.00E+01	**8E-03**	---	2.66E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	5.79E-01	Y	1.43E-02	---	2.00E+00	**7E-03**	---	1.22E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	8.68E-04	---	2.00E+02	**4E-06**	---	7.44E-05	-		---
VINYL CHLORIDE	75-01-4	2.56E-02	N	6.30E-04	---	8.00E+01	**8E-06**	---	5.40E-05	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0263H**	**Total Inhalation**	**4E-01**	**0E+00**	**2E-06**
		Based on NDs only	**4E-01**	**0E+00**	**2E-06**
		Based on Detects only	**2E-02**	**All ND**	**7E-08**
		Site-related only	**2E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0263H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.47E+00	2.45E-02	1.47E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	5.79E-01	4.08E-03	2.45E-03	NA	NA	1.0E-06	kidney	4E-09	2E-09	---	---	**7E-09**
TRICHLOROETHENE	79-01-6	5.79E-01	1.22E-03		NA		3.1E-06	NHL+liver	4E-09		---		**4E-09**
VINYL CHLORIDE	75-01-4	2.56E-02	1.80E-04	1.08E-04	NA	NA	4.4E-06		8E-10	5E-10	---	---	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0273H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.15E-02	N	2.84E-04	---	NA	---	---	2.43E-05	5.80E-05		**1E-09**
1,3-BUTADIENE	106-99-0	5.50E-02	N	1.36E-03	---	2.00E+00	**7E-04**	---	1.16E-04	3.00E-05		**3E-09**
1,4-DIOXANE	123-91-1	7.50E-02	N	1.85E-03	---	3.00E+01	**6E-05**	---	1.59E-04	5.00E-06		**8E-10**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	1.85E-04	---	2.00E-01	**9E-04**	---	1.59E-05	1.60E-05		**3E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	1.23E-02	---	2.00E+00	**6E-03**	---	1.06E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.90E-01	Y	1.46E-02	---	6.00E+01	**2E-04**	---	1.25E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.55E-02	N	8.76E-04	---	9.00E+00	**1E-04**	---	7.51E-05	6.00E-04		**5E-08**
1,2-DICHLOROETHANE	107-06-2	1.60E-01	Y	3.95E-03	---	7.00E+00	**6E-04**	---	3.38E-04	2.60E-05		**9E-09**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	2.47E-03	---	4.00E+00	**6E-04**	---	2.11E-04	3.70E-06		**8E-10**
1,3,5-Trimethylbenzene	108-67-8	2.10E-01	Y	5.18E-03	---	6.00E+01	**9E-05**	---	4.44E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	1.36E-03	---	8.00E+02	**2E-06**	---	1.16E-04	1.10E-05		**1E-09**
BENZENE	71-43-2	4.50E-01	Y	1.11E-02	---	3.00E+01	**4E-04**	---	9.51E-04	7.80E-06		**7E-09**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	2.22E-03	---	1.00E+00	**2E-03**	---	1.90E-04	4.90E-05		**9E-09**
BROMODICHLOROMETHANE	75-27-4	1.35E-01	N	3.33E-03	---	NA	---	---	2.85E-04	3.70E-05		**1E-08**
BROMOMETHANE	74-83-9	7.00E-01	N	1.73E-02	---	5.00E+00	**3E-03**	---	1.48E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	9.87E-03	---	1.00E+02	**1E-04**	---	8.46E-04	6.00E-06		**5E-09**
CHLOROFORM	67-66-3	5.30E-01	Y	1.31E-02	---	9.77E+01	**1E-04**	---	1.12E-03	2.30E-05		**3E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.50E-01	Y	3.70E-03	---	1.00E+03	**4E-06**	---	3.17E-04	2.50E-06		**8E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	1.73E-02	---	NA	---	---	1.48E-03	2.20E-05		**3E-08**
ISOPROPYL ALCOHOL	67-63-0	2.30E+01	Y	5.67E-01	---	2.00E+02	**3E-03**	---	4.86E-02	-		---
M,P-XYLENE	108-38-3	5.10E-01	Y	1.26E-02	---	1.00E+02	**1E-04**	---	1.08E-03	-		---
METHYLENE CHLORIDE	75-09-2	2.30E-01	N	5.67E-03	---	6.00E+02	**9E-06**	---	4.86E-04	1.00E-08	M	**3E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.70E-01	Y	4.19E-03	---	1.00E+02	**4E-05**	---	3.59E-04	-		---
TETRACHLOROETHENE	127-18-4	2.70E+00	Y	6.66E-02	---	4.00E+01	**2E-03**	---	5.71E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	1.75E-02	N	4.32E-04	---	2.00E+00	**2E-04**	---	3.70E-05	4.10E-06	M	**3E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.50E-03	N	2.10E-04	---	8.00E+01	**3E-06**	---	1.80E-05	4.40E-06	M	**4E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0273H**	**Total Inhalation**	**2E-02**	**0E+00**	**2E-07**
		Based on NDs only	**1E-02**	**0E+00**	**1E-07**
		Based on Detects only	**6E-03**	**All ND**	**5E-08**
		Site-related only	**2E-03**	**0E+00**	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0273H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.30E-01	1.62E-03	9.73E-04	NA	NA	1.0E-08		2E-11	1E-11	---	---	**3E-11**
TRICHLOROETHENE	79-01-6	1.75E-02	1.23E-04	7.40E-05	NA	NA	1.0E-06	kidney	1E-10	7E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	1.75E-02	3.70E-05		NA		3.1E-06	NHL+liver	1E-10		---		**1E-10**
VINYL CHLORIDE	75-01-4	8.50E-03	5.99E-05	3.59E-05	NA	NA	4.4E-06		3E-10	2E-10	---	---	**4E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0274H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-02	N	5.92E-04	---	NA	---	---	5.07E-05	5.80E-05		**3E-09**
1,3-BUTADIENE	106-99-0	4.90E-02	N	1.21E-03	---	2.00E+00	**6E-04**	---	1.04E-04	3.00E-05		**3E-09**
1,4-DIOXANE	123-91-1	8.00E-02	N	1.97E-03	---	3.00E+01	**7E-05**	---	1.69E-04	5.00E-06		**8E-10**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	2.96E-04	---	2.00E-01	**1E-03**	---	2.54E-05	1.60E-05		**4E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	4.95E-01	N	1.22E-02	---	2.00E+00	**6E-03**	---	1.05E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E-01	Y	3.95E-03	---	6.00E+01	**7E-05**	---	3.38E-04	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.30E-02	N	1.06E-03	---	9.00E+00	**1E-04**	---	9.09E-05	6.00E-04		**5E-08**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	3.45E-03	---	7.00E+00	**5E-04**	---	2.96E-04	2.60E-05		**8E-09**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	2.34E-03	---	4.00E+00	**6E-04**	---	2.01E-04	3.70E-06		**7E-10**
1,3,5-Trimethylbenzene	108-67-8	8.00E-02	N	1.97E-03	---	6.00E+01	**3E-05**	---	1.69E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.55E-02	N	1.12E-03	---	8.00E+02	**1E-06**	---	9.62E-05	1.10E-05		**1E-09**
BENZENE	71-43-2	3.60E-01	Y	8.88E-03	---	3.00E+01	**3E-04**	---	7.61E-04	7.80E-06		**6E-09**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	2.59E-03	---	1.00E+00	**3E-03**	---	2.22E-04	4.90E-05		**1E-08**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	2.71E-03	---	NA	**---**	---	2.33E-04	3.70E-05		**9E-09**
BROMOMETHANE	74-83-9	6.00E-01	N	1.48E-02	---	5.00E+00	**3E-03**	---	1.27E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	1.01E-02	---	1.00E+02	**1E-04**	---	8.67E-04	6.00E-06		**5E-09**
CHLOROFORM	67-66-3	5.10E-01	Y	1.26E-02	---	9.77E+01	**1E-04**	---	1.08E-03	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.60E+00	Y	3.95E-02	---	1.00E+03	**4E-05**	---	3.38E-03	2.50E-06		**8E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.10E-01	N	1.01E-02	---	NA	**---**	---	8.67E-04	2.20E-05		**2E-08**
ISOPROPYL ALCOHOL	67-63-0	4.40E+01	Y	1.09E+00	---	2.00E+02	**5E-03**	---	9.30E-02	-		**---**
M,P-XYLENE	108-38-3	6.20E+00	Y	1.53E-01	---	1.00E+02	**2E-03**	---	1.31E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	6.20E-01	Y	1.53E-02	---	6.00E+02	**3E-05**	---	1.31E-03	1.00E-08	M	**7E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.40E+00	Y	3.45E-02	---	1.00E+02	**3E-04**	---	2.96E-03	-		**---**
TETRACHLOROETHENE	127-18-4	1.20E+01	Y	2.96E-01	---	4.00E+01	**7E-03**	---	2.54E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	3.50E-02	Y	8.63E-04	---	2.00E+00	**4E-04**	---	7.40E-05	4.10E-06	M	**6E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		**---**
VINYL CHLORIDE	75-01-4	3.80E-03	N	9.37E-05	---	8.00E+01	**1E-06**	---	8.03E-06	4.40E-06	M	**2E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0274H**	**Total Inhalation**	**3E-02**	**0E+00**	**2E-07**
		Based on NDs only	**1E-02**	**0E+00**	**1E-07**
		Based on Detects only	**2E-02**	**All ND**	**6E-08**
		Site-related only	**8E-03**	**0E+00**	**8E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0274H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.20E-01	4.37E-03	2.62E-03	NA	NA	1.0E-08		4E-11	3E-11	---	---	**7E-11**
TRICHLOROETHENE	79-01-6	3.50E-02	2.47E-04	1.48E-04	NA	NA	1.0E-06	kidney	2E-10	1E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	3.50E-02	7.40E-05		NA		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	3.80E-03	2.68E-05	1.61E-05	NA	NA	4.4E-06		1E-10	7E-11	---	---	**2E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0277H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.15E-02	N	2.84E-04	---	NA	---	---	2.43E-05	5.80E-05		**1E-09**
1,3-BUTADIENE	106-99-0	5.00E-02	N	1.23E-03	---	2.00E+00	**6E-04**	---	1.06E-04	3.00E-05		**3E-09**
1,4-DIOXANE	123-91-1	7.50E-02	N	1.85E-03	---	3.00E+01	**6E-05**	---	1.59E-04	5.00E-06		**8E-10**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	1.85E-04	---	2.00E-01	**9E-04**	---	1.59E-05	1.60E-05		**3E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	1.23E-02	---	2.00E+00	**6E-03**	---	1.06E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E-01	Y	2.96E-03	---	6.00E+01	**5E-05**	---	2.54E-04	-		---
1,2-DIBROMOETHANE	106-93-4	3.50E-02	N	8.63E-04	---	9.00E+00	**1E-04**	---	7.40E-05	6.00E-04		**4E-08**
1,2-DICHLOROETHANE	107-06-2	2.60E-01	Y	6.41E-03	---	7.00E+00	**9E-04**	---	5.50E-04	2.60E-05		**1E-08**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	2.47E-03	---	4.00E+00	**6E-04**	---	2.11E-04	3.70E-06		**8E-10**
1,3,5-Trimethylbenzene	108-67-8	6.50E-02	N	1.60E-03	---	6.00E+01	**3E-05**	---	1.37E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	1.36E-03	---	8.00E+02	**2E-06**	---	1.16E-04	1.10E-05		**1E-09**
BENZENE	71-43-2	4.00E-01	Y	9.87E-03	---	3.00E+01	**3E-04**	---	8.46E-04	7.80E-06		**7E-09**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	2.22E-03	---	1.00E+00	**2E-03**	---	1.90E-04	4.90E-05		**9E-09**
BROMODICHLOROMETHANE	75-27-4	1.35E-01	N	3.33E-03	---	NA	---	---	2.85E-04	3.70E-05		**1E-08**
BROMOMETHANE	74-83-9	7.00E-01	N	1.73E-02	---	5.00E+00	**3E-03**	---	1.48E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	9.87E-03	---	1.00E+02	**1E-04**	---	8.46E-04	6.00E-06		**5E-09**
CHLOROFORM	67-66-3	4.90E-01	Y	1.21E-02	---	9.77E+01	**1E-04**	---	1.04E-03	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.40E-01	Y	5.92E-03	---	1.00E+03	**6E-06**	---	5.07E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	1.73E-02	---	NA	---	---	1.48E-03	2.20E-05		**3E-08**
ISOPROPYL ALCOHOL	67-63-0	8.00E+00	Y	1.97E-01	---	2.00E+02	**1E-03**	---	1.69E-02	-		---
M,P-XYLENE	108-38-3	9.00E-01	Y	2.22E-02	---	1.00E+02	**2E-04**	---	1.90E-03	-		---
METHYLENE CHLORIDE	75-09-2	3.40E+00	Y	8.39E-02	---	6.00E+02	**1E-04**	---	7.19E-03	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.60E-01	Y	6.41E-03	---	1.00E+02	**6E-05**	---	5.50E-04	-		---
TETRACHLOROETHENE	127-18-4	5.00E+00	Y	1.23E-01	---	4.00E+01	**3E-03**	---	1.06E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	1.75E-02	N	4.32E-04	---	2.00E+00	**2E-04**	---	3.70E-05	4.10E-06	M	**3E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.50E-03	N	2.10E-04	---	8.00E+01	**3E-06**	---	1.80E-05	4.40E-06	M	**4E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0277H**	**Total Inhalation**	**2E-02**	**0E+00**	**2E-07**
		Based on NDs only	**1E-02**	**0E+00**	**1E-07**
		Based on Detects only	**6E-03**	**All ND**	**5E-08**
		Site-related only	**3E-03**	**0E+00**	**4E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0277H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.40E+00	2.40E-02	1.44E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	1.75E-02	1.23E-04	7.40E-05	NA	NA	1.0E-06	kidney	1E-10	7E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	1.75E-02	3.70E-05		NA		3.1E-06	NHL+liver	1E-10		---		**1E-10**
VINYL CHLORIDE	75-01-4	8.50E-03	5.99E-05	3.59E-05	NA	NA	4.4E-06		3E-10	2E-10	---	---	**4E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0302H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00E-02	N	2.47E-04	---	NA	---	---	2.11E-05	5.80E-05		**1E-09**
1,3-BUTADIENE	106-99-0	4.65E-02	N	1.15E-03	---	2.00E+00	**6E-04**	---	9.83E-05	3.00E-05		**3E-09**
1,4-DIOXANE	123-91-1	7.00E-02	N	1.73E-03	---	3.00E+01	**6E-05**	---	1.48E-04	5.00E-06		**7E-10**
1,1,2-TRICHLOROETHANE	79-00-5	6.50E-03	N	1.60E-04	---	2.00E-01	**8E-04**	---	1.37E-05	1.60E-05		**2E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	4.55E-01	N	1.12E-02	---	2.00E+00	**6E-03**	---	9.62E-04	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E-01	Y	3.95E-03	---	6.00E+01	**7E-05**	---	3.38E-04	-		---
1,2-DIBROMOETHANE	106-93-4	3.10E-02	N	7.65E-04	---	9.00E+00	**8E-05**	---	6.55E-05	6.00E-04		**4E-08**
1,2-DICHLOROETHANE	107-06-2	9.80E-02	Y	2.42E-03	---	7.00E+00	**3E-04**	---	2.07E-04	2.60E-05		**5E-09**
1,2-DICHLOROPROPANE	78-87-5	8.50E-02	N	2.10E-03	---	4.00E+00	**5E-04**	---	1.80E-04	3.70E-06		**7E-10**
1,3,5-Trimethylbenzene	108-67-8	5.50E-02	N	1.36E-03	---	6.00E+01	**2E-05**	---	1.16E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	4.90E-02	N	1.21E-03	---	8.00E+02	**2E-06**	---	1.04E-04	1.10E-05		**1E-09**
BENZENE	71-43-2	4.80E-01	Y	1.18E-02	---	3.00E+01	**4E-04**	---	1.01E-03	7.80E-06		**8E-09**
BENZYL CHLORIDE	100-44-7	8.00E-02	N	1.97E-03	---	1.00E+00	**2E-03**	---	1.69E-04	4.90E-05		**8E-09**
BROMODICHLOROMETHANE	75-27-4	1.20E-01	N	2.96E-03	---	NA	---	---	2.54E-04	3.70E-05		**9E-09**
BROMOMETHANE	74-83-9	6.00E-01	N	1.48E-02	---	5.00E+00	**3E-03**	---	1.27E-03	-		---
CARBON TETRACHLORIDE	56-23-5	3.90E-01	Y	9.62E-03	---	1.00E+02	**1E-04**	---	8.25E-04	6.00E-06		**5E-09**
CHLOROFORM	67-66-3	3.70E-01	Y	9.13E-03	---	9.77E+01	**9E-05**	---	7.82E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.30E-01	Y	3.21E-03	---	1.00E+03	**3E-06**	---	2.75E-04	2.50E-06		**7E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.00E-01	N	1.48E-02	---	NA	---	---	1.27E-03	2.20E-05		**3E-08**
ISOPROPYL ALCOHOL	67-63-0	1.50E+01	Y	3.70E-01	---	2.00E+02	**2E-03**	---	3.17E-02	-		---
M,P-XYLENE	108-38-3	5.40E-01	Y	1.33E-02	---	1.00E+02	**1E-04**	---	1.14E-03	-		---
METHYLENE CHLORIDE	75-09-2	2.50E-01	N	6.17E-03	---	6.00E+02	**1E-05**	---	5.29E-04	1.00E-08	M	**3E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.70E-01	Y	6.66E-03	---	1.00E+02	**7E-05**	---	5.71E-04	-		---
TETRACHLOROETHENE	127-18-4	3.40E-01	Y	8.39E-03	---	4.00E+01	**2E-04**	---	7.19E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	1.55E-02	N	3.82E-04	---	2.00E+00	**2E-04**	---	3.28E-05	4.10E-06	M	**3E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	7.50E-03	N	1.85E-04	---	8.00E+01	**2E-06**	---	1.59E-05	4.40E-06	M	**4E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0302H**	**Total Inhalation**	**2E-02**	**0E+00**	**1E-07**
		Based on NDs only	**1E-02**	**0E+00**	**9E-08**
		Based on Detects only	**3E-03**	**All ND**	**4E-08**
		Site-related only	**5E-04**	**0E+00**	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0302H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.50E-01	1.76E-03	1.06E-03	NA	NA	1.0E-08		2E-11	1E-11	---	---	**3E-11**
TRICHLOROETHENE	79-01-6	1.55E-02	1.09E-04	6.55E-05	NA	NA	1.0E-06	kidney	1E-10	7E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	1.55E-02	3.28E-05		NA		3.1E-06	NHL+liver	1E-10		---		**1E-10**
VINYL CHLORIDE	75-01-4	7.50E-03	5.29E-05	3.17E-05	NA	NA	4.4E-06		2E-10	1E-10	---	---	**4E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0315H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	2.71E-04	---	NA	---	---	2.33E-05	5.80E-05		**1E-09**
1,3-BUTADIENE	106-99-0	5.00E-02	N	1.23E-03	---	2.00E+00	**6E-04**	---	1.06E-04	3.00E-05		**3E-09**
1,4-DIOXANE	123-91-1	7.50E-02	N	1.85E-03	---	3.00E+01	**6E-05**	---	1.59E-04	5.00E-06		**8E-10**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	1.73E-04	---	2.00E-01	**9E-04**	---	1.48E-05	1.60E-05		**2E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	1.23E-02	---	2.00E+00	**6E-03**	---	1.06E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.50E-02	N	1.36E-03	---	6.00E+01	**2E-05**	---	1.16E-04	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.45E-02	N	8.51E-04	---	9.00E+00	**9E-05**	---	7.29E-05	6.00E-04		**4E-08**
1,2-DICHLOROETHANE	107-06-2	1.30E-01	Y	3.21E-03	---	7.00E+00	**5E-04**	---	2.75E-04	2.60E-05		**7E-09**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	2.34E-03	---	4.00E+00	**6E-04**	---	2.01E-04	3.70E-06		**7E-10**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	1.48E-03	---	6.00E+01	**2E-05**	---	1.27E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	1.36E-03	---	8.00E+02	**2E-06**	---	1.16E-04	1.10E-05		**1E-09**
BENZENE	71-43-2	4.30E-01	Y	1.06E-02	---	3.00E+01	**4E-04**	---	9.09E-04	7.80E-06		**7E-09**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	2.22E-03	---	1.00E+00	**2E-03**	---	1.90E-04	4.90E-05		**9E-09**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	3.21E-03	---	NA	---	---	2.75E-04	3.70E-05		**1E-08**
BROMOMETHANE	74-83-9	7.00E-01	N	1.73E-02	---	5.00E+00	**3E-03**	---	1.48E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	9.87E-03	---	1.00E+02	**1E-04**	---	8.46E-04	6.00E-06		**5E-09**
CHLOROFORM	67-66-3	3.90E-01	Y	9.62E-03	---	9.77E+01	**1E-04**	---	8.25E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.40E-01	Y	3.45E-03	---	1.00E+03	**3E-06**	---	2.96E-04	2.50E-06		**7E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	1.73E-02	---	NA	---	---	1.48E-03	2.20E-05		**3E-08**
ISOPROPYL ALCOHOL	67-63-0	1.70E+01	Y	4.19E-01	---	2.00E+02	**2E-03**	---	3.59E-02	-		**---**
M,P-XYLENE	108-38-3	4.40E-01	Y	1.09E-02	---	1.00E+02	**1E-04**	---	9.30E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	2.60E-01	N	6.41E-03	---	6.00E+02	**1E-05**	---	5.50E-04	1.00E-08	M	**3E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.40E-01	Y	3.45E-03	---	1.00E+02	**3E-05**	---	2.96E-04	-		**---**
TETRACHLOROETHENE	127-18-4	2.30E+00	Y	5.67E-02	---	4.00E+01	**1E-03**	---	4.86E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	7.15E-03	---	2.00E+00	**4E-03**	---	6.13E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	8.50E-03	N	2.10E-04	---	8.00E+01	**3E-06**	---	1.80E-05	4.40E-06	M	**4E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0315H**	**Total Inhalation**	**2E-02**	**0E+00**	**1E-07**
		Based on NDs only	**1E-02**	**0E+00**	**1E-07**
		Based on Detects only	**8E-03**	**All ND**	**5E-08**
		Site-related only	**5E-03**	**0E+00**	**8E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0315H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.60E-01	1.83E-03	1.10E-03	NA	NA	1.0E-08		2E-11	1E-11	---	---	**3E-11**
TRICHLOROETHENE	79-01-6	2.90E-01	2.04E-03	1.23E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.90E-01	6.13E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	8.50E-03	5.99E-05	3.59E-05	NA	NA	4.4E-06		3E-10	2E-10	---	---	**4E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0329H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-02	N	5.92E-04	---	NA	---	---	5.07E-05	5.80E-05		**3E-09**
1,3-BUTADIENE	106-99-0	4.90E-02	N	1.21E-03	---	2.00E+00	**6E-04**	---	1.04E-04	3.00E-05		**3E-09**
1,4-DIOXANE	123-91-1	8.00E-02	N	1.97E-03	---	3.00E+01	**7E-05**	---	1.69E-04	5.00E-06		**8E-10**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	2.96E-04	---	2.00E-01	**1E-03**	---	2.54E-05	1.60E-05		**4E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	4.95E-01	N	1.22E-02	---	2.00E+00	**6E-03**	---	1.05E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	3.40E-01	Y	8.39E-03	---	6.00E+01	**1E-04**	---	7.19E-04	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.30E-02	N	1.06E-03	---	9.00E+00	**1E-04**	---	9.09E-05	6.00E-04		**5E-08**
1,2-DICHLOROETHANE	107-06-2	7.20E-02	Y	1.78E-03	---	7.00E+00	**3E-04**	---	1.52E-04	2.60E-05		**4E-09**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	2.34E-03	---	4.00E+00	**6E-04**	---	2.01E-04	3.70E-06		**7E-10**
1,3,5-Trimethylbenzene	108-67-8	8.00E-02	N	1.97E-03	---	6.00E+01	**3E-05**	---	1.69E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.55E-02	N	1.12E-03	---	8.00E+02	**1E-06**	---	9.62E-05	1.10E-05		**1E-09**
BENZENE	71-43-2	3.80E-01	Y	9.37E-03	---	3.00E+01	**3E-04**	---	8.03E-04	7.80E-06		**6E-09**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	2.59E-03	---	1.00E+00	**3E-03**	---	2.22E-04	4.90E-05		**1E-08**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	2.71E-03	---	NA	**---**	---	2.33E-04	3.70E-05		**9E-09**
BROMOMETHANE	74-83-9	6.00E-01	N	1.48E-02	---	5.00E+00	**3E-03**	---	1.27E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	1.04E-02	---	1.00E+02	**1E-04**	---	8.88E-04	6.00E-06		**5E-09**
CHLOROFORM	67-66-3	7.60E-02	Y	1.87E-03	---	9.77E+01	**2E-05**	---	1.61E-04	2.30E-05		**4E-09**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.60E-01	Y	6.41E-03	---	1.00E+03	**6E-06**	---	5.50E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.10E-01	N	1.01E-02	---	NA	**---**	---	8.67E-04	2.20E-05		**2E-08**
ISOPROPYL ALCOHOL	67-63-0	1.10E+01	Y	2.71E-01	---	2.00E+02	**1E-03**	---	2.33E-02	-		**---**
M,P-XYLENE	108-38-3	1.10E+00	Y	2.71E-02	---	1.00E+02	**3E-04**	---	2.33E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	4.90E-01	Y	1.21E-02	---	6.00E+02	**2E-05**	---	1.04E-03	1.00E-08	M	**6E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	4.10E-01	Y	1.01E-02	---	1.00E+02	**1E-04**	---	8.67E-04	-		**---**
TETRACHLOROETHENE	127-18-4	9.20E-02	Y	2.27E-03	---	4.00E+01	**6E-05**	---	1.95E-04	2.60E-07		**5E-11**
TRICHLOROETHENE	79-01-6	8.00E-03	N	1.97E-04	---	2.00E+00	**1E-04**	---	1.69E-05	4.10E-06	M	**1E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		**---**
VINYL CHLORIDE	75-01-4	3.80E-03	N	9.37E-05	---	8.00E+01	**1E-06**	---	8.03E-06	4.40E-06	M	**2E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0329H**	**Total Inhalation**	**2E-02**	**0E+00**	**1E-07**
		Based on NDs only	**1E-02**	**0E+00**	**1E-07**
		Based on Detects only	**3E-03**	**All ND**	**2E-08**
		Site-related only	**2E-04**	**0E+00**	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0329H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.90E-01	3.45E-03	2.07E-03	NA	NA	1.0E-08		3E-11	2E-11	---	---	**6E-11**
TRICHLOROETHENE	79-01-6	8.00E-03	5.64E-05	3.38E-05	NA	NA	1.0E-06	kidney	6E-11	3E-11	---	---	**9E-11**
TRICHLOROETHENE	79-01-6	8.00E-03	1.69E-05		NA		3.1E-06	NHL+liver	5E-11		---		**5E-11**
VINYL CHLORIDE	75-01-4	3.80E-03	2.68E-05	1.61E-05	NA	NA	4.4E-06		1E-10	7E-11	---	---	**2E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0334H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	1.69E-03	---	NA	---	---	1.45E-04	5.80E-05		**8E-09**
1,3-BUTADIENE	106-99-0	2.22E+00	N	5.46E-02	---	2.00E+00	**3E-02**	---	4.68E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	3.61E-01	N	8.89E-03	---	3.00E+01	**3E-04**	---	7.62E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	2.01E-03	---	2.00E-01	**1E-02**	---	1.72E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	5.75E-02	---	2.00E+00	**3E-02**	---	4.93E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	1.21E-02	---	6.00E+01	**2E-04**	---	1.04E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	1.90E-03	---	9.00E+00	**2E-04**	---	1.63E-04	6.00E-04		**1E-07**
1,2-DICHLOROETHANE	107-06-2	9.92E-02	Y	2.45E-03	---	7.00E+00	**3E-04**	---	2.10E-04	2.60E-05		**5E-09**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	1.71E-03	---	4.00E+00	**4E-04**	---	1.47E-04	3.70E-06		**5E-10**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	1.21E-02	---	6.00E+01	**2E-04**	---	1.04E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	8.42E-02	Y	2.08E-03	---	8.00E+02	**3E-06**	---	1.78E-04	1.10E-05		**2E-09**
BENZENE	71-43-2	5.78E-01	Y	1.43E-02	---	3.00E+01	**5E-04**	---	1.22E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	1.28E-02	---	1.00E+00	**1E-02**	---	1.10E-03	4.90E-05		**5E-08**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	1.65E-02	---	NA	---	---	1.42E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	3.88E-01	N	9.57E-03	---	5.00E+00	**2E-03**	---	8.20E-04	-		---
CARBON TETRACHLORIDE	56-23-5	5.40E-01	Y	1.33E-02	---	1.00E+02	**1E-04**	---	1.14E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	1.67E+00	Y	4.12E-02	---	9.77E+01	**4E-04**	---	3.53E-03	2.30E-05		**8E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.71E-01	Y	6.68E-03	---	1.00E+03	**7E-06**	---	5.73E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	8.30E-02	---	NA	---	---	7.11E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	7.94E+00	Y	1.96E-01	---	2.00E+02	**1E-03**	---	1.68E-02	-		---
M,P-XYLENE	108-38-3	8.45E-01	Y	2.08E-02	---	1.00E+02	**2E-04**	---	1.79E-03	-		---
METHYLENE CHLORIDE	75-09-2	6.49E-01	Y	1.60E-02	---	6.00E+02	**3E-05**	---	1.37E-03	1.00E-08	M	**7E-11**
NAPHTHALENE	91-20-3	1.65E+00	N	4.07E-02	---	3.00E+00	**1E-02**	---	3.49E-03	3.40E-05		**1E-07**
O-XYLENE	95-47-6	4.34E-01	N	1.07E-02	---	1.00E+02	**1E-04**	---	9.17E-04	-		---
TETRACHLOROETHENE	127-18-4	9.64E-02	Y	2.38E-03	---	4.00E+01	**6E-05**	---	2.04E-04	2.60E-07		**5E-11**
TRICHLOROETHENE	79-01-6	5.35E-02	N	1.32E-03	---	2.00E+00	**7E-04**	---	1.13E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	3.52E-02	N	8.68E-04	---	2.00E+02	**4E-06**	---	7.44E-05	-		---
VINYL CHLORIDE	75-01-4	2.56E-02	N	6.30E-04	---	8.00E+01	**8E-06**	---	5.40E-05	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0334H**	**Total Inhalation**	**1E-01**	**0E+00**	**7E-07**
		Based on NDs only	**1E-01**	**0E+00**	**6E-07**
		Based on Detects only	**3E-03**	**All ND**	**1E-07**
		Site-related only	**1E-03**	**0E+00**	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0334H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.49E-01	4.57E-03	2.74E-03	NA	NA	1.0E-08		5E-11	3E-11	---	---	**7E-11**
TRICHLOROETHENE	79-01-6	5.35E-02	3.77E-04	2.26E-04	NA	NA	1.0E-06	kidney	4E-10	2E-10	---	---	**6E-10**
TRICHLOROETHENE	79-01-6	5.35E-02	1.13E-04		NA		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	2.56E-02	1.80E-04	1.08E-04	NA	NA	4.4E-06		8E-10	5E-10	---	---	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0336H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-02	N	5.92E-04	---	NA	---	---	5.07E-05	5.80E-05		**3E-09**
1,3-BUTADIENE	106-99-0	4.90E-02	N	1.21E-03	---	2.00E+00	**6E-04**	---	1.04E-04	3.00E-05		**3E-09**
1,4-DIOXANE	123-91-1	8.00E-02	N	1.97E-03	---	3.00E+01	**7E-05**	---	1.69E-04	5.00E-06		**8E-10**
1,1,2-TRICHLOROETHANE	79-00-5	1.15E-02	N	2.84E-04	---	2.00E-01	**1E-03**	---	2.43E-05	1.60E-05		**4E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	4.90E-01	N	1.21E-02	---	2.00E+00	**6E-03**	---	1.04E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	2.20E-01	Y	5.43E-03	---	6.00E+01	**9E-05**	---	4.65E-04	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.25E-02	N	1.05E-03	---	9.00E+00	**1E-04**	---	8.99E-05	6.00E-04		**5E-08**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	1.90E-03	---	7.00E+00	**3E-04**	---	1.63E-04	2.60E-05		**4E-09**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	2.34E-03	---	4.00E+00	**6E-04**	---	2.01E-04	3.70E-06		**7E-10**
1,3,5-Trimethylbenzene	108-67-8	8.00E-02	N	1.97E-03	---	6.00E+01	**3E-05**	---	1.69E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.50E-02	N	1.11E-03	---	8.00E+02	**1E-06**	---	9.51E-05	1.10E-05		**1E-09**
BENZENE	71-43-2	5.50E-01	Y	1.36E-02	---	3.00E+01	**5E-04**	---	1.16E-03	7.80E-06		**9E-09**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	2.59E-03	---	1.00E+00	**3E-03**	---	2.22E-04	4.90E-05		**1E-08**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	2.71E-03	---	NA	**---**	---	2.33E-04	3.70E-05		**9E-09**
BROMOMETHANE	74-83-9	5.50E-01	N	1.36E-02	---	5.00E+00	**3E-03**	---	1.16E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	1.04E-02	---	1.00E+02	**1E-04**	---	8.88E-04	6.00E-06		**5E-09**
CHLOROFORM	67-66-3	3.10E-01	Y	7.65E-03	---	9.77E+01	**8E-05**	---	6.55E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.10E-01	Y	5.18E-03	---	1.00E+03	**5E-06**	---	4.44E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.05E-01	N	9.99E-03	---	NA	**---**	---	8.56E-04	2.20E-05		**2E-08**
ISOPROPYL ALCOHOL	67-63-0	1.90E+01	Y	4.69E-01	---	2.00E+02	**2E-03**	---	4.02E-02	-		**---**
M,P-XYLENE	108-38-3	6.90E-01	Y	1.70E-02	---	1.00E+02	**2E-04**	---	1.46E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	5.00E-01	Y	1.23E-02	---	6.00E+02	**2E-05**	---	1.06E-03	1.00E-08	M	**6E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.30E-01	Y	5.67E-03	---	1.00E+02	**6E-05**	---	4.86E-04	-		**---**
TETRACHLOROETHENE	127-18-4	1.60E+01	Y	3.95E-01	---	4.00E+01	**1E-02**	---	3.38E-02	2.60E-07		**9E-09**
TRICHLOROETHENE	79-01-6	1.80E-02	Y	4.44E-04	---	2.00E+00	**2E-04**	---	3.81E-05	4.10E-06	M	**3E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		**---**
VINYL CHLORIDE	75-01-4	3.80E-03	N	9.37E-05	---	8.00E+01	**1E-06**	---	8.03E-06	4.40E-06	M	**2E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0336H**	**Total Inhalation**	**3E-02**	**0E+00**	**1E-07**
		Based on NDs only	**1E-02**	**0E+00**	**1E-07**
		Based on Detects only	**1E-02**	**All ND**	**4E-08**
		Site-related only	**1E-02**	**0E+00**	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0336H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.00E-01	3.52E-03	2.11E-03	NA	NA	1.0E-08		4E-11	2E-11	---	---	**6E-11**
TRICHLOROETHENE	79-01-6	1.80E-02	1.27E-04	7.61E-05	NA	NA	1.0E-06	kidney	1E-10	8E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	1.80E-02	3.81E-05		NA		3.1E-06	NHL+liver	1E-10		---		**1E-10**
VINYL CHLORIDE	75-01-4	3.80E-03	2.68E-05	1.61E-05	NA	NA	4.4E-06		1E-10	7E-11	---	---	**2E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0347H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.55E-02	N	6.29E-04	---	NA	---	---	5.39E-05	5.80E-05		**3E-09**
1,3-BUTADIENE	106-99-0	5.00E-02	N	1.23E-03	---	2.00E+00	**6E-04**	---	1.06E-04	3.00E-05		**3E-09**
1,4-DIOXANE	123-91-1	8.50E-02	N	2.10E-03	---	3.00E+01	**7E-05**	---	1.80E-04	5.00E-06		**9E-10**
1,1,2-TRICHLOROETHANE	79-00-5	1.25E-02	N	3.08E-04	---	2.00E-01	**2E-03**	---	2.64E-05	1.60E-05		**4E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	1.23E-02	---	2.00E+00	**6E-03**	---	1.06E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.30E-01	Y	1.06E-02	---	6.00E+01	**2E-04**	---	9.09E-04	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.55E-02	N	1.12E-03	---	9.00E+00	**1E-04**	---	9.62E-05	6.00E-04		**6E-08**
1,2-DICHLOROETHANE	107-06-2	1.20E+00	Y	2.96E-02	---	7.00E+00	**4E-03**	---	2.54E-03	2.60E-05		**7E-08**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	2.47E-03	---	4.00E+00	**6E-04**	---	2.11E-04	3.70E-06		**8E-10**
1,3,5-Trimethylbenzene	108-67-8	8.50E-02	N	2.10E-03	---	6.00E+01	**3E-05**	---	1.80E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.80E-02	N	1.18E-03	---	8.00E+02	**1E-06**	---	1.01E-04	1.10E-05		**1E-09**
BENZENE	71-43-2	4.90E-01	Y	1.21E-02	---	3.00E+01	**4E-04**	---	1.04E-03	7.80E-06		**8E-09**
BENZYL CHLORIDE	100-44-7	1.15E-01	N	2.84E-03	---	1.00E+00	**3E-03**	---	2.43E-04	4.90E-05		**1E-08**
BROMODICHLOROMETHANE	75-27-4	1.15E-01	N	2.84E-03	---	NA	**---**	---	2.43E-04	3.70E-05		**9E-09**
BROMOMETHANE	74-83-9	6.00E-01	N	1.48E-02	---	5.00E+00	**3E-03**	---	1.27E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	1.04E-02	---	1.00E+02	**1E-04**	---	8.88E-04	6.00E-06		**5E-09**
CHLOROFORM	67-66-3	1.00E+00	Y	2.47E-02	---	9.77E+01	**3E-04**	---	2.11E-03	2.30E-05		**5E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	---	---	-		**---**
ETHYLBENZENE	100-41-4	6.30E-01	Y	1.55E-02	---	1.00E+03	**2E-05**	---	1.33E-03	2.50E-06		**3E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.35E-01	N	1.07E-02	---	NA	**---**	---	9.20E-04	2.20E-05		**2E-08**
ISOPROPYL ALCOHOL	67-63-0	1.50E+01	Y	3.70E-01	---	2.00E+02	**2E-03**	---	3.17E-02	-		**---**
M,P-XYLENE	108-38-3	2.00E+00	Y	4.93E-02	---	1.00E+02	**5E-04**	---	4.23E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	5.00E-01	Y	1.23E-02	---	6.00E+02	**2E-05**	---	1.06E-03	1.00E-08	M	**6E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	6.40E-01	Y	1.58E-02	---	1.00E+02	**2E-04**	---	1.35E-03	-		**---**
TETRACHLOROETHENE	127-18-4	9.00E-02	Y	2.22E-03	---	4.00E+01	**6E-05**	---	1.90E-04	2.60E-07		**5E-11**
TRICHLOROETHENE	79-01-6	2.70E-02	Y	6.66E-04	---	2.00E+00	**3E-04**	---	5.71E-05	4.10E-06	M	**5E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		**---**
VINYL CHLORIDE	75-01-4	4.05E-03	N	9.99E-05	---	8.00E+01	**1E-06**	---	8.56E-06	4.40E-06	M	**2E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0347H**	**Total Inhalation**	**2E-02**	**0E+00**	**2E-07**
		Based on NDs only	**1E-02**	**0E+00**	**1E-07**
		Based on Detects only	**8E-03**	**All ND**	**1E-07**
		Site-related only	**5E-04**	**0E+00**	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0347H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.00E-01	3.52E-03	2.11E-03	NA	NA	1.0E-08		4E-11	2E-11	---	---	**6E-11**
TRICHLOROETHENE	79-01-6	2.70E-02	1.90E-04	1.14E-04	NA	NA	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	2.70E-02	5.71E-05		NA		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	4.05E-03	2.85E-05	1.71E-05	NA	NA	4.4E-06		1E-10	8E-11	---	---	**2E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0366C**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	1.69E-03	---	NA	---	---	1.45E-04	5.80E-05		**8E-09**
1,3-BUTADIENE	106-99-0	2.22E+00	N	5.46E-02	---	2.00E+00	**3E-02**	---	4.68E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	3.61E-01	N	8.89E-03	---	3.00E+01	**3E-04**	---	7.62E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	2.01E-03	---	2.00E-01	**1E-02**	---	1.72E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	5.75E-02	---	2.00E+00	**3E-02**	---	4.93E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.11E-01	Y	1.01E-02	---	6.00E+01	**2E-04**	---	8.69E-04	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	1.90E-03	---	9.00E+00	**2E-04**	---	1.63E-04	6.00E-04		**1E-07**
1,2-DICHLOROETHANE	107-06-2	1.84E-01	Y	4.54E-03	---	7.00E+00	**6E-04**	---	3.89E-04	2.60E-05		**1E-08**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	1.71E-03	---	4.00E+00	**4E-04**	---	1.47E-04	3.70E-06		**5E-10**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	1.21E-02	---	6.00E+01	**2E-04**	---	1.04E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.80E-01	Y	4.44E-03	---	8.00E+02	**6E-06**	---	3.81E-04	1.10E-05		**4E-09**
BENZENE	71-43-2	7.83E-01	Y	1.93E-02	---	3.00E+01	**6E-04**	---	1.66E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	1.28E-02	---	1.00E+00	**1E-02**	---	1.10E-03	4.90E-05		**5E-08**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	1.65E-02	---	NA	---	---	1.42E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	3.88E-01	N	9.57E-03	---	5.00E+00	**2E-03**	---	8.20E-04	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.67E-01	Y	1.40E-02	---	1.00E+02	**1E-04**	---	1.20E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	6.04E-01	Y	1.49E-02	---	9.77E+01	**2E-04**	---	1.28E-03	2.30E-05		**3E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	4.90E+00	Y	1.21E-01	---	1.00E+03	**1E-04**	---	1.04E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	8.30E-02	---	NA	---	---	7.11E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	1.27E+01	Y	3.13E-01	---	2.00E+02	**2E-03**	---	2.69E-02	-		**---**
M,P-XYLENE	108-38-3	1.22E+01	Y	3.01E-01	---	1.00E+02	**3E-03**	---	2.58E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	7.74E+00	Y	1.91E-01	---	6.00E+02	**3E-04**	---	1.64E-02	1.00E-08	M	**9E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	4.07E-02	---	3.00E+00	**1E-02**	---	3.49E-03	3.40E-05		**1E-07**
O-XYLENE	95-47-6	2.42E+00	Y	5.97E-02	---	1.00E+02	**6E-04**	---	5.12E-03	-		**---**
TETRACHLOROETHENE	127-18-4	1.07E+00	Y	2.64E-02	---	4.00E+01	**7E-04**	---	2.26E-03	2.60E-07		**6E-10**
TRICHLOROETHENE	79-01-6	6.59E-02	Y	1.63E-03	---	2.00E+00	**8E-04**	---	1.39E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	3.52E-02	N	8.68E-04	---	2.00E+02	**4E-06**	---	7.44E-05	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	6.30E-04	---	8.00E+01	**8E-06**	---	5.40E-05	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0366C**	**Total Inhalation**	**1E-01**	**0E+00**	**7E-07**
		Based on NDs only	**1E-01**	**0E+00**	**6E-07**
		Based on Detects only	**9E-03**	**All ND**	**9E-08**
		Site-related only	**2E-03**	**0E+00**	**7E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0366C**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.74E+00	5.45E-02	3.27E-02	NA	NA	1.0E-08		5E-10	3E-10	---	---	**9E-10**
TRICHLOROETHENE	79-01-6	6.59E-02	4.64E-04	2.79E-04	NA	NA	1.0E-06	kidney	5E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	6.59E-02	1.39E-04		NA		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	2.56E-02	1.80E-04	1.08E-04	NA	NA	4.4E-06		8E-10	5E-10	---	---	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0381H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.15E-02	N	2.84E-04	---	NA	---	---	2.43E-05	5.80E-05		**1E-09**
1,3-BUTADIENE	106-99-0	5.50E-02	N	1.36E-03	---	2.00E+00	**7E-04**	---	1.16E-04	3.00E-05		**3E-09**
1,4-DIOXANE	123-91-1	4.30E-01	Y	1.06E-02	---	3.00E+01	**4E-04**	---	9.09E-04	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	1.85E-04	---	2.00E-01	**9E-04**	---	1.59E-05	1.60E-05		**3E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	5.50E-01	N	1.36E-02	---	2.00E+00	**7E-03**	---	1.16E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.10E-01	Y	5.18E-03	---	6.00E+01	**9E-05**	---	4.44E-04	-		---
1,2-DIBROMOETHANE	106-93-4	3.65E-02	N	9.00E-04	---	9.00E+00	**1E-04**	---	7.72E-05	6.00E-04		**5E-08**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	2.71E-03	---	7.00E+00	**4E-04**	---	2.33E-04	2.60E-05		**6E-09**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	2.47E-03	---	4.00E+00	**6E-04**	---	2.11E-04	3.70E-06		**8E-10**
1,3,5-Trimethylbenzene	108-67-8	6.50E-02	N	1.60E-03	---	6.00E+01	**3E-05**	---	1.37E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	1.36E-03	---	8.00E+02	**2E-06**	---	1.16E-04	1.10E-05		**1E-09**
BENZENE	71-43-2	7.60E-01	Y	1.87E-02	---	3.00E+01	**6E-04**	---	1.61E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	9.50E-02	N	2.34E-03	---	1.00E+00	**2E-03**	---	2.01E-04	4.90E-05		**1E-08**
BROMODICHLOROMETHANE	75-27-4	1.40E-01	N	3.45E-03	---	NA	---	---	2.96E-04	3.70E-05		**1E-08**
BROMOMETHANE	74-83-9	7.00E-01	N	1.73E-02	---	5.00E+00	**3E-03**	---	1.48E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	1.01E-02	---	1.00E+02	**1E-04**	---	8.67E-04	6.00E-06		**5E-09**
CHLOROFORM	67-66-3	9.60E-01	Y	2.37E-02	---	9.77E+01	**2E-04**	---	2.03E-03	2.30E-05		**5E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.40E+00	Y	5.92E-02	---	1.00E+03	**6E-05**	---	5.07E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	1.73E-02	---	NA	---	---	1.48E-03	2.20E-05		**3E-08**
ISOPROPYL ALCOHOL	67-63-0	2.40E+01	Y	5.92E-01	---	2.00E+02	**3E-03**	---	5.07E-02	-		---
M,P-XYLENE	108-38-3	1.00E+01	Y	2.47E-01	---	1.00E+02	**2E-03**	---	2.11E-02	-		---
METHYLENE CHLORIDE	75-09-2	2.80E-01	N	6.91E-03	---	6.00E+02	**1E-05**	---	5.92E-04	1.00E-08	M	**3E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.70E+00	Y	6.66E-02	---	1.00E+02	**7E-04**	---	5.71E-03	-		---
TETRACHLOROETHENE	127-18-4	6.20E-02	Y	1.53E-03	---	4.00E+01	**4E-05**	---	1.31E-04	2.60E-07		**3E-11**
TRICHLOROETHENE	79-01-6	1.80E-02	N	4.44E-04	---	2.00E+00	**2E-04**	---	3.81E-05	4.10E-06	M	**3E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	9.00E-03	N	2.22E-04	---	8.00E+01	**3E-06**	---	1.90E-05	4.40E-06	M	**4E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0381H**	**Total Inhalation**	**2E-02**	**0E+00**	**2E-07**
		Based on NDs only	**2E-02**	**0E+00**	**1E-07**
		Based on Detects only	**8E-03**	**All ND**	**9E-08**
		Site-related only	**6E-04**	**0E+00**	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0381H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.80E-01	1.97E-03	1.18E-03	NA	NA	1.0E-08		2E-11	1E-11	---	---	**3E-11**
TRICHLOROETHENE	79-01-6	1.80E-02	1.27E-04	7.61E-05	NA	NA	1.0E-06	kidney	1E-10	8E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	1.80E-02	3.81E-05		NA		3.1E-06	NHL+liver	1E-10		---		**1E-10**
VINYL CHLORIDE	75-01-4	9.00E-03	6.34E-05	3.81E-05	NA	NA	4.4E-06		3E-10	2E-10	---	---	**4E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0392H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.30E-02	N	5.67E-04	---	NA	---	---	4.86E-05	5.80E-05		**3E-09**
1,3-BUTADIENE	106-99-0	1.10E-01	N	2.71E-03	---	2.00E+00	**1E-03**	---	2.33E-04	3.00E-05		**7E-09**
1,4-DIOXANE	123-91-1	1.55E-01	N	3.82E-03	---	3.00E+01	**1E-04**	---	3.28E-04	5.00E-06		**2E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.50E-02	N	3.70E-04	---	2.00E-01	**2E-03**	---	3.17E-05	1.60E-05		**5E-10**
1,2,4-TRICHLOROBENZENE	120-82-1	1.05E+00	N	2.59E-02	---	2.00E+00	**1E-02**	---	2.22E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.60E-01	Y	1.13E-02	---	6.00E+01	**2E-04**	---	9.73E-04	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	1.73E-03	---	9.00E+00	**2E-04**	---	1.48E-04	6.00E-04		**9E-08**
1,2-DICHLOROETHANE	107-06-2	8.40E-02	Y	2.07E-03	---	7.00E+00	**3E-04**	---	1.78E-04	2.60E-05		**5E-09**
1,2-DICHLOROPROPANE	78-87-5	2.00E-01	N	4.93E-03	---	4.00E+00	**1E-03**	---	4.23E-04	3.70E-06		**2E-09**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	3.21E-03	---	6.00E+01	**5E-05**	---	2.75E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.10E-01	N	2.71E-03	---	8.00E+02	**3E-06**	---	2.33E-04	1.10E-05		**3E-09**
BENZENE	71-43-2	6.30E-01	Y	1.55E-02	---	3.00E+01	**5E-04**	---	1.33E-03	7.80E-06		**1E-08**
BENZYL CHLORIDE	100-44-7	1.85E-01	N	4.56E-03	---	1.00E+00	**5E-03**	---	3.91E-04	4.90E-05		**2E-08**
BROMODICHLOROMETHANE	75-27-4	2.75E-01	N	6.78E-03	---	NA	---	---	5.81E-04	3.70E-05		**2E-08**
BROMOMETHANE	74-83-9	1.45E+00	N	3.58E-02	---	5.00E+00	**7E-03**	---	3.07E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	9.37E-03	---	1.00E+02	**9E-05**	---	8.03E-04	6.00E-06		**5E-09**
CHLOROFORM	67-66-3	2.70E-01	Y	6.66E-03	---	9.77E+01	**7E-05**	---	5.71E-04	2.30E-05		**1E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	3.00E-01	Y	7.40E-03	---	1.00E+03	**7E-06**	---	6.34E-04	2.50E-06		**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.40E+00	N	3.45E-02	---	NA	---	---	2.96E-03	2.20E-05		**7E-08**
ISOPROPYL ALCOHOL	67-63-0	2.60E+01	Y	6.41E-01	---	2.00E+02	**3E-03**	---	5.50E-02	-		**---**
M,P-XYLENE	108-38-3	1.20E+00	Y	2.96E-02	---	1.00E+02	**3E-04**	---	2.54E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	3.10E-01	N	7.65E-03	---	6.00E+02	**1E-05**	---	6.55E-04	1.00E-08	M	**3E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	5.20E-01	Y	1.28E-02	---	1.00E+02	**1E-04**	---	1.10E-03	-		**---**
TETRACHLOROETHENE	127-18-4	7.40E-02	Y	1.83E-03	---	4.00E+01	**5E-05**	---	1.56E-04	2.60E-07		**4E-11**
TRICHLOROETHENE	79-01-6	3.60E-02	N	8.88E-04	---	2.00E+00	**4E-04**	---	7.61E-05	4.10E-06	M	**6E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	1.75E-02	N	4.32E-04	---	8.00E+01	**5E-06**	---	3.70E-05	4.40E-06	M	**9E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0392H**	**Total Inhalation**	**3E-02**	**0E+00**	**2E-07**
		Based on NDs only	**3E-02**	**0E+00**	**2E-07**
		Based on Detects only	**5E-03**	**All ND**	**3E-08**
		Site-related only	**6E-04**	**0E+00**	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0392H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.10E-01	2.18E-03	1.31E-03	NA	NA	1.0E-08		2E-11	1E-11	---	---	**3E-11**
TRICHLOROETHENE	79-01-6	3.60E-02	2.54E-04	1.52E-04	NA	NA	1.0E-06	kidney	3E-10	2E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	3.60E-02	7.61E-05		NA		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	1.75E-02	1.23E-04	7.40E-05	NA	NA	4.4E-06		5E-10	3E-10	---	---	**9E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0395H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	1.69E-03	---	NA	---	---	1.45E-04	5.80E-05		**8E-09**
1,3-BUTADIENE	106-99-0	2.22E+00	N	5.46E-02	---	2.00E+00	**3E-02**	---	4.68E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	3.61E-01	N	8.89E-03	---	3.00E+01	**3E-04**	---	7.62E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	2.01E-03	---	2.00E-01	**1E-02**	---	1.72E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	5.75E-02	---	2.00E+00	**3E-02**	---	4.93E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	1.21E-02	---	6.00E+01	**2E-04**	---	1.04E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	1.90E-03	---	9.00E+00	**2E-04**	---	1.63E-04	6.00E-04		**1E-07**
1,2-DICHLOROETHANE	107-06-2	1.60E-01	Y	3.95E-03	---	7.00E+00	**6E-04**	---	3.38E-04	2.60E-05		**9E-09**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	1.71E-03	---	4.00E+00	**4E-04**	---	1.47E-04	3.70E-06		**5E-10**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	1.21E-02	---	6.00E+01	**2E-04**	---	1.04E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.13E-02	Y	1.51E-03	---	8.00E+02	**2E-06**	---	1.30E-04	1.10E-05		**1E-09**
BENZENE	71-43-2	5.27E-01	Y	1.30E-02	---	3.00E+01	**4E-04**	---	1.11E-03	7.80E-06		**9E-09**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	1.28E-02	---	1.00E+00	**1E-02**	---	1.10E-03	4.90E-05		**5E-08**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	1.65E-02	---	NA	---	---	1.42E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	3.88E-01	N	9.57E-03	---	5.00E+00	**2E-03**	---	8.20E-04	-		**---**
CARBON TETRACHLORIDE	56-23-5	6.08E-01	Y	1.50E-02	---	1.00E+02	**1E-04**	---	1.29E-03	6.00E-06		**8E-09**
CHLOROFORM	67-66-3	5.31E-01	Y	1.31E-02	---	9.77E+01	**1E-04**	---	1.12E-03	2.30E-05		**3E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.43E-01	Y	5.99E-03	---	1.00E+03	**6E-06**	---	5.14E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	8.30E-02	---	NA	---	---	7.11E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	3.52E+01	Y	8.68E-01	---	2.00E+02	**4E-03**	---	7.44E-02	-		**---**
M,P-XYLENE	108-38-3	8.65E-01	N	2.13E-02	---	1.00E+02	**2E-04**	---	1.83E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	6.91E-01	Y	1.70E-02	---	6.00E+02	**3E-05**	---	1.46E-03	1.00E-08	M	**8E-11**
NAPHTHALENE	91-20-3	1.65E+00	N	4.07E-02	---	3.00E+00	**1E-02**	---	3.49E-03	3.40E-05		**1E-07**
O-XYLENE	95-47-6	4.34E-01	N	1.07E-02	---	1.00E+02	**1E-04**	---	9.17E-04	-		**---**
TETRACHLOROETHENE	127-18-4	2.70E-01	Y	6.66E-03	---	4.00E+01	**2E-04**	---	5.71E-04	2.60E-07		**1E-10**
TRICHLOROETHENE	79-01-6	2.17E-01	Y	5.35E-03	---	2.00E+00	**3E-03**	---	4.59E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	3.52E-02	N	8.68E-04	---	2.00E+02	**4E-06**	---	7.44E-05	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	6.30E-04	---	8.00E+01	**8E-06**	---	5.40E-05	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0395H**	**Total Inhalation**	**1E-01**	**0E+00**	**7E-07**
		Based on NDs only	**1E-01**	**0E+00**	**6E-07**
		Based on Detects only	**9E-03**	**All ND**	**6E-08**
		Site-related only	**3E-03**	**0E+00**	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0395H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.91E-01	4.87E-03	2.92E-03	NA	NA	1.0E-08		5E-11	3E-11	---	---	**8E-11**
TRICHLOROETHENE	79-01-6	2.17E-01	1.53E-03	9.18E-04	NA	NA	1.0E-06	kidney	2E-09	9E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	2.17E-01	4.59E-04		NA		3.1E-06	NHL+liver	1E-09		---		**1E-09**
VINYL CHLORIDE	75-01-4	2.56E-02	1.80E-04	1.08E-04	NA	NA	4.4E-06		8E-10	5E-10	---	---	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**B13-I**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime	
	TWFnc (unitless)	2.47E-02	#N/A		TWFc (unitless)	2.11E-03	

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.40E-01	N	8.39E-03	---	4.00E+01	**2E-04**	---	7.19E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.70E-01	N	6.66E-03	---	2.00E+00	**3E-03**	---	5.71E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**B13-I**	**Total Inhalation**	**4E-03**	**0E+00**	**5E-09**
		Based on NDs only	**4E-03**	**0E+00**	**5E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**B13-I**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	2.11E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.70E-01	1.90E-03	1.14E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.70E-01	5.71E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0001H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	3.12E-01	2.66E-01	NA	---	---	3.55E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.01E-01	8.56E-02	2.00E+00	**5E-02**	**4E-02**	1.14E-02	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	5.47E-02	4.65E-02	3.00E+01	**2E-03**	**2E-03**	6.21E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	9.46E-01	8.04E-01	2.00E+00	**5E-01**	**4E-01**	1.07E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	4.55E-01	3.87E-01	6.00E+01	**8E-03**	**6E-03**	5.17E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.30E+00	Y	7.89E-01	6.71E-01	7.00E+00	**1E-01**	**1E-01**	8.96E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	4.55E-01	3.87E-01	6.00E+01	**8E-03**	**6E-03**	5.17E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	5.47E-01	4.65E-01	8.00E+02	**7E-04**	**6E-04**	6.21E-02	1.10E-05		**7E-07**
BENZENE	71-43-2	6.50E-01	Y	3.95E-01	3.35E-01	3.00E+01	**1E-02**	**1E-02**	4.48E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	5.81E-01	4.94E-01	1.00E+00	**6E-01**	**5E-01**	6.60E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	3.05E-01	2.59E-01	NA	---	---	3.46E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	1.77E-01	1.50E-01	5.00E+00	**4E-02**	**3E-02**	2.01E-02	-		---
CARBON TETRACHLORIDE	56-23-5	1.10E+00	Y	6.68E-01	5.68E-01	1.00E+02	**7E-03**	**6E-03**	7.58E-02	6.00E-06		**5E-07**
CHLOROFORM	67-66-3	1.30E+00	Y	7.89E-01	6.71E-01	9.77E+01	**8E-03**	**7E-03**	8.96E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	2.10E+01	Y	1.28E+01	1.08E+01	7.00E+01	**2E-01**	**2E-01**	1.45E+00	-		---
ETHYLBENZENE	100-41-4	2.52E+00	Y	1.53E+00	1.30E+00	1.00E+03	**2E-03**	**1E-03**	1.74E-01	2.50E-06		**4E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	9.72E-01	8.26E-01	NA	---	---	1.10E-01	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	9.55E+00	Y	5.80E+00	4.93E+00	1.00E+02	**6E-02**	**5E-02**	6.58E-01	-		---
METHYLENE CHLORIDE	75-09-2	1.94E+00	Y	1.18E+00	1.00E+00	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**4E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.43E+00	Y	1.48E+00	1.25E+00	1.00E+02	**1E-02**	**1E-02**	1.68E-01	-		---
TETRACHLOROETHENE	127-18-4	5.15E+00	Y	3.13E+00	2.66E+00	4.00E+01	**8E-02**	**7E-02**	3.55E-01	2.60E-07		**9E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.52E-01	1.29E-01	2.00E+00	**8E-02**	**6E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	2.14E-01	1.82E-01	2.00E+02	**1E-03**	**9E-04**	2.43E-02	-		---
VINYL CHLORIDE	75-01-4	1.74E-01	Y	1.05E-01	8.96E-02	8.00E+01	**1E-03**	**1E-03**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0001H**	**Total Inhalation**	**3E+00**	**3E+00**	**4E-05**
		Based on NDs only	**3E+00**	**2E+00**	**4E-05**
		Based on Detects only	**5E-01**	**4E-01**	**6E-06**
		Site-related only	**2E-01**	**1E-01**	**4E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0001H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.94E+00	1.12E-01	6.75E-02	1.50E-01	5.02E-02	1.0E-08		1E-09	7E-10	2E-09	5E-10	**4E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	1.45E-02	8.68E-03	1.93E-02	6.45E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	6E-09	**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	4.34E-03		1.29E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	1.74E-01	1.00E-02	6.03E-03	1.34E-02	4.48E-03	4.4E-06		4E-08	3E-08	6E-08	2E-08	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0002H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	3.12E-01	2.66E-01	NA	---	---	3.55E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.01E-01	8.56E-02	2.00E+00	**5E-02**	**4E-02**	1.14E-02	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	5.47E-02	4.65E-02	3.00E+01	**2E-03**	**2E-03**	6.21E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	9.46E-01	8.04E-01	2.00E+00	**5E-01**	**4E-01**	1.07E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	4.55E-01	3.87E-01	6.00E+01	**8E-03**	**6E-03**	5.17E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	1.85E-01	1.57E-01	7.00E+00	**3E-02**	**2E-02**	2.10E-02	2.60E-05		**5E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	4.55E-01	3.87E-01	6.00E+01	**8E-03**	**6E-03**	5.17E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	5.47E-01	4.65E-01	8.00E+02	**7E-04**	**6E-04**	6.21E-02	1.10E-05		**7E-07**
BENZENE	71-43-2	5.50E-01	Y	3.34E-01	2.84E-01	3.00E+01	**1E-02**	**9E-03**	3.79E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	5.81E-01	4.94E-01	1.00E+00	**6E-01**	**5E-01**	6.60E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	3.05E-01	2.59E-01	NA	---	---	3.46E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	1.77E-01	1.50E-01	5.00E+00	**4E-02**	**3E-02**	2.01E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	2.86E-01	2.43E-01	1.00E+02	**3E-03**	**2E-03**	3.25E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.32E+00	Y	8.00E-01	6.80E-01	9.77E+01	**8E-03**	**7E-03**	9.08E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	1.84E+01	Y	1.12E+01	9.48E+00	7.00E+01	**2E-01**	**1E-01**	1.27E+00	-		**---**
ETHYLBENZENE	100-41-4	7.38E-01	Y	4.48E-01	3.81E-01	1.00E+03	**4E-04**	**4E-04**	5.09E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	9.72E-01	8.26E-01	NA	---	---	1.10E-01	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
M,P-XYLENE	108-38-3	5.40E+00	Y	3.28E+00	2.79E+00	1.00E+02	**3E-02**	**3E-02**	3.72E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	8.68E+00	Y	5.27E+00	4.48E+00	6.00E+02	**9E-03**	**7E-03**	M	1.00E-08	M	**2E-08**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	9.70E-01	Y	5.89E-01	5.01E-01	1.00E+02	**6E-03**	**5E-03**	6.69E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.42E+00	Y	8.64E-01	7.34E-01	4.00E+01	**2E-02**	**2E-02**	9.81E-02	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	1.76E-01	1.50E-01	2.00E+00	**9E-02**	**7E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	2.14E-01	1.82E-01	2.00E+02	**1E-03**	**9E-04**	2.43E-02	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	3.95E-02	3.35E-02	8.00E+01	**5E-04**	**4E-04**	M	4.40E-06	M	**6E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0002H**	**Total Inhalation**	**3E+00**	**2E+00**	**4E-05**
		Based on NDs only	**3E+00**	**2E+00**	**4E-05**
		Based on Detects only	**3E-01**	**3E-01**	**3E-06**
		Site-related only	**1E-01**	**1E-01**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0002H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.68E+00	5.02E-01	3.01E-01	6.72E-01	2.24E-01	1.0E-08		5E-09	3E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	2.90E-01	1.68E-02	1.01E-02	2.24E-02	7.48E-03	1.0E-06	kidney	2E-08	1E-08	2E-08	7E-09	**6E-08**
TRICHLOROETHENE	79-01-6	2.90E-01	5.03E-03		1.50E-02		3.1E-06	NHL+liver	2E-08		5E-08		**6E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	3.76E-03	2.26E-03	5.03E-03	1.68E-03	4.4E-06		2E-08	1E-08	2E-08	7E-09	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0003H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	3.30E+00	Y	2.00E+00	1.70E+00	NA	---	---	2.28E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	2.90E-01	Y	1.76E-01	1.50E-01	2.00E+00	**9E-02**	**7E-02**	2.00E-02	3.00E-05		**6E-07**
1,4-DIOXANE	123-91-1	2.95E-01	N	1.79E-01	1.52E-01	3.00E+01	**6E-03**	**5E-03**	2.03E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	6.76E-01	5.74E-01	2.00E+00	**3E-01**	**3E-01**	7.67E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	2.60E+01	Y	1.58E+01	1.34E+01	6.00E+01	**3E-01**	**2E-01**	1.80E+00	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	2.00E-01	Y	1.21E-01	1.03E-01	7.00E+00	**2E-02**	**1E-02**	1.38E-02	2.60E-05		**4E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	7.90E+00	Y	4.80E+00	4.08E+00	6.00E+01	**8E-02**	**7E-02**	5.45E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	2.74E-01	2.33E-01	8.00E+02	**3E-04**	**3E-04**	3.11E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	2.20E+01	Y	1.34E+01	1.14E+01	3.00E+01	**4E-01**	**4E-01**	1.52E+00	7.80E-06		**1E-05**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	4.86E-01	4.13E-01	1.00E+00	**5E-01**	**4E-01**	5.52E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	3.05E-01	2.59E-01	NA	---	---	3.46E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	5.00E-01	N	3.04E-01	2.58E-01	5.00E+00	**6E-02**	**5E-02**	3.45E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	6.30E-01	Y	3.83E-01	3.25E-01	1.00E+02	**4E-03**	**3E-03**	4.34E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	4.73E+01	Y	2.87E+01	2.44E+01	9.77E+01	**3E-01**	**2E-01**	3.26E+00	2.30E-05		**8E-05**
ETHYL ACETATE	141-78-6	1.44E+01	Y	8.75E+00	7.43E+00	7.00E+01	**1E-01**	**1E-01**	9.93E-01	-		**---**
ETHYLBENZENE	100-41-4	1.30E+01	Y	7.91E+00	6.72E+00	1.00E+03	**8E-03**	**7E-03**	8.98E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	9.72E-01	8.26E-01	NA	---	---	1.10E-01	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	2.60E+01	Y	1.58E+01	1.34E+01	2.00E+02	**8E-02**	**7E-02**	1.79E+00	-		**---**
M,P-XYLENE	108-38-3	6.95E+01	Y	4.22E+01	3.59E+01	1.00E+02	**4E-01**	**4E-01**	4.79E+00	-		**---**
METHYLENE CHLORIDE	75-09-2	9.50E-01	Y	5.77E-01	4.90E-01	6.00E+02	**1E-03**	**8E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	7.00E-02	Y	4.25E-02	3.61E-02	3.00E+00	**1E-02**	**1E-02**	4.83E-03	3.40E-05		**2E-07**
O-XYLENE	95-47-6	2.20E+01	Y	1.34E+01	1.14E+01	1.00E+02	**1E-01**	**1E-01**	1.52E+00	-		**---**
TETRACHLOROETHENE	127-18-4	1.70E+01	Y	1.03E+01	8.77E+00	4.00E+01	**3E-01**	**2E-01**	1.17E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	4.10E-02	Y	2.49E-02	2.12E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	1.61E-01	1.37E-01	2.00E+02	**8E-04**	**7E-04**	1.83E-02	-		**---**
VINYL CHLORIDE	75-01-4	1.92E-01	N	1.16E-01	9.89E-02	8.00E+01	**1E-03**	**1E-03**	M	4.40E-06	M	**2E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0003H**	**Total Inhalation**	**4E+00**	**4E+00**	**1E-04**
		Based on NDs only	**2E+00**	**2E+00**	**3E-05**
		Based on Detects only	**2E+00**	**2E+00**	**1E-04**
		Site-related only	**3E-01**	**2E-01**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0003H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.50E-01	5.49E-02	3.30E-02	7.35E-02	2.45E-02	1.0E-08		5E-10	3E-10	7E-10	2E-10	**2E-09**
TRICHLOROETHENE	79-01-6	4.10E-02	2.37E-03	1.42E-03	3.17E-03	1.06E-03	1.0E-06	kidney	2E-09	1E-09	3E-09	1E-09	**8E-09**
TRICHLOROETHENE	79-01-6	4.10E-02	7.11E-04		2.12E-03		3.1E-06	NHL+liver	2E-09		7E-09		**9E-09**
VINYL CHLORIDE	75-01-4	1.92E-01	1.11E-02	6.65E-03	1.48E-02	4.94E-03	4.4E-06		5E-08	3E-08	7E-08	2E-08	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0004H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	3.12E-01	2.66E-01	NA	---	---	3.55E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.01E-01	8.56E-02	2.00E+00	**5E-02**	**4E-02**	1.14E-02	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	5.47E-02	4.65E-02	3.00E+01	**2E-03**	**2E-03**	6.21E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	9.46E-01	8.04E-01	2.00E+00	**5E-01**	**4E-01**	1.07E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	4.55E-01	3.87E-01	6.00E+01	**8E-03**	**6E-03**	5.17E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	1.85E-01	1.57E-01	7.00E+00	**3E-02**	**2E-02**	2.10E-02	2.60E-05		**5E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	4.55E-01	3.87E-01	6.00E+01	**8E-03**	**6E-03**	5.17E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	5.47E-01	4.65E-01	8.00E+02	**7E-04**	**6E-04**	6.21E-02	1.10E-05		**7E-07**
BENZENE	71-43-2	6.71E-01	Y	4.07E-01	3.46E-01	3.00E+01	**1E-02**	**1E-02**	4.62E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	5.81E-01	4.94E-01	1.00E+00	**6E-01**	**5E-01**	6.60E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	3.05E-01	2.59E-01	NA	---	---	3.46E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	1.77E-01	1.50E-01	5.00E+00	**4E-02**	**3E-02**	2.01E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	2.86E-01	2.43E-01	1.00E+02	**3E-03**	**2E-03**	3.25E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	8.50E-01	Y	5.16E-01	4.39E-01	9.77E+01	**5E-03**	**4E-03**	5.86E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	1.60E+00	Y	9.72E-01	8.26E-01	7.00E+01	**1E-02**	**1E-02**	1.10E-01	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	1.98E-01	1.68E-01	1.00E+03	**2E-04**	**2E-04**	2.24E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	9.72E-01	8.26E-01	NA	---	---	1.10E-01	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	9.99E-01	Y	6.06E-01	5.15E-01	1.00E+02	**6E-03**	**5E-03**	6.89E-02	-		---
METHYLENE CHLORIDE	75-09-2	2.10E+00	Y	1.28E+00	1.08E+00	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**4E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	1.98E-01	1.68E-01	1.00E+02	**2E-03**	**2E-03**	2.24E-02	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.13E-01	1.81E-01	4.00E+01	**5E-03**	**5E-03**	2.41E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.52E-01	1.29E-01	2.00E+00	**8E-02**	**6E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	2.14E-01	1.82E-01	2.00E+02	**1E-03**	**9E-04**	2.43E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	3.95E-02	3.35E-02	8.00E+01	**5E-04**	**4E-04**	M	4.40E-06	M	**6E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0004H**	**Total Inhalation**	**3E+00**	**2E+00**	**4E-05**
		Based on NDs only	**3E+00**	**2E+00**	**4E-05**
		Based on Detects only	**4E-02**	**3E-02**	**2E-06**
		Site-related only	**8E-02**	**7E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0004H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.10E+00	1.21E-01	7.29E-02	1.63E-01	5.42E-02	1.0E-08		1E-09	7E-10	2E-09	5E-10	**4E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	1.45E-02	8.68E-03	1.93E-02	6.45E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	6E-09	**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	4.34E-03		1.29E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	3.76E-03	2.26E-03	5.03E-03	1.68E-03	4.4E-06		2E-08	1E-08	2E-08	7E-09	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0008H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	3.12E-01	2.66E-01	NA	---	---	3.55E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.01E-01	8.56E-02	2.00E+00	**5E-02**	**4E-02**	1.14E-02	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	6.76E-01	5.74E-01	2.00E+00	**3E-01**	**3E-01**	7.67E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.70E+01	Y	1.64E+01	1.39E+01	6.00E+01	**3E-01**	**2E-01**	1.86E+00	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	1.85E-01	1.57E-01	7.00E+00	**3E-02**	**2E-02**	2.10E-02	2.60E-05		**5E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	8.84E+00	Y	5.37E+00	4.56E+00	6.00E+01	**9E-02**	**8E-02**	6.10E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	2.74E-01	2.33E-01	8.00E+02	**3E-04**	**3E-04**	3.11E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	3.51E+01	Y	2.13E+01	1.81E+01	3.00E+01	**7E-01**	**6E-01**	2.42E+00	7.80E-06		**2E-05**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	4.86E-01	4.13E-01	1.00E+00	**5E-01**	**4E-01**	5.52E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	3.05E-01	2.59E-01	NA	---	---	3.46E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	1.77E-01	1.50E-01	5.00E+00	**4E-02**	**3E-02**	2.01E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	2.86E-01	2.43E-01	1.00E+02	**3E-03**	**2E-03**	3.25E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.66E-01	N	2.22E-01	1.89E-01	9.77E+01	**2E-03**	**2E-03**	2.52E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	2.10E+00	Y	1.28E+00	1.08E+00	7.00E+01	**2E-02**	**2E-02**	1.45E-01	-		---
ETHYLBENZENE	100-41-4	2.73E+01	Y	1.66E+01	1.41E+01	1.00E+03	**2E-02**	**1E-02**	1.89E+00	2.50E-06		**5E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	9.72E-01	8.26E-01	NA	---	---	1.10E-01	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.22E+02	Y	7.38E+01	6.27E+01	1.00E+02	**7E-01**	**6E-01**	8.38E+00	-		---
METHYLENE CHLORIDE	75-09-2	8.00E-01	Y	4.86E-01	4.13E-01	6.00E+02	**8E-04**	**7E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	4.04E+01	Y	2.45E+01	2.08E+01	1.00E+02	**2E-01**	**2E-01**	2.78E+00	-		---
TETRACHLOROETHENE	127-18-4	2.91E+00	Y	1.77E+00	1.50E+00	4.00E+01	**4E-02**	**4E-02**	2.01E-01	2.60E-07		**5E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	N	2.46E-01	2.09E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	1.61E-01	1.37E-01	2.00E+02	**8E-04**	**7E-04**	1.83E-02	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	1.16E-01	9.89E-02	8.00E+01	**1E-03**	**1E-03**	M	4.40E-06	M	**2E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0008H**	**Total Inhalation**	**5E+00**	**4E+00**	**6E-05**
		Based on NDs only	**2E+00**	**2E+00**	**4E-05**
		Based on Detects only	**2E+00**	**2E+00**	**2E-05**
		Site-related only	**2E-01**	**1E-01**	**4E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0008H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.00E-01	4.63E-02	2.78E-02	6.19E-02	2.06E-02	1.0E-08		5E-10	3E-10	6E-10	2E-10	**2E-09**
TRICHLOROETHENE	79-01-6	4.05E-01	2.34E-02	1.41E-02	3.13E-02	1.04E-02	1.0E-06	kidney	2E-08	1E-08	3E-08	1E-08	**8E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	7.03E-03		2.09E-02		3.1E-06	NHL+liver	2E-08		6E-08		**9E-08**
VINYL CHLORIDE	75-01-4	1.92E-01	1.11E-02	6.65E-03	1.48E-02	4.94E-03	4.4E-06		5E-08	3E-08	7E-08	2E-08	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0011H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	3.12E-01	2.66E-01	NA	---	---	3.55E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.40E-01	Y	8.50E-02	7.22E-02	2.00E+00	**4E-02**	**4E-02**	9.65E-03	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	1.70E-01	Y	1.03E-01	8.77E-02	3.00E+01	**3E-03**	**3E-03**	1.17E-02	5.00E-06		**6E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.45E+00	N	8.81E-01	7.48E-01	2.00E+00	**4E-01**	**4E-01**	1.00E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	3.60E-01	Y	2.19E-01	1.86E-01	6.00E+01	**4E-03**	**3E-03**	2.48E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.20E-01	Y	7.29E-02	6.19E-02	7.00E+00	**1E-02**	**9E-03**	8.27E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	2.25E-01	1.91E-01	6.00E+01	**4E-03**	**3E-03**	2.55E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	2.74E-01	2.33E-01	8.00E+02	**3E-04**	**3E-04**	3.11E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	8.60E-01	Y	5.22E-01	4.44E-01	3.00E+01	**2E-02**	**1E-02**	5.93E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	6.68E-02	5.68E-02	1.00E+00	**7E-02**	**6E-02**	7.58E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	3.05E-01	2.59E-01	NA	---	---	3.46E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	3.70E-01	N	2.25E-01	1.91E-01	5.00E+00	**4E-02**	**4E-02**	2.55E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	2.79E-01	2.37E-01	1.00E+02	**3E-03**	**2E-03**	3.17E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	5.50E-01	Y	3.34E-01	2.84E-01	9.77E+01	**3E-03**	**3E-03**	3.79E-02	2.30E-05		**9E-07**
ETHYL ACETATE	141-78-6	1.62E+00	Y	9.84E-01	8.36E-01	7.00E+01	**1E-02**	**1E-02**	1.12E-01	-		**---**
ETHYLBENZENE	100-41-4	4.70E-01	Y	2.85E-01	2.43E-01	1.00E+03	**3E-04**	**2E-04**	3.24E-02	2.50E-06		**8E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.95E+00	N	1.18E+00	1.01E+00	NA	---	---	1.34E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	5.90E+00	Y	3.58E+00	3.04E+00	2.00E+02	**2E-02**	**2E-02**	4.07E-01	-		**---**
M,P-XYLENE	108-38-3	1.20E+00	Y	7.29E-01	6.19E-01	1.00E+02	**7E-03**	**6E-03**	8.27E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	3.82E+00	Y	2.32E+00	1.97E+00	6.00E+02	**4E-03**	**3E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	4.65E-02	N	2.82E-02	2.40E-02	3.00E+00	**9E-03**	**8E-03**	3.21E-03	3.40E-05		**1E-07**
O-XYLENE	95-47-6	4.50E-01	Y	2.73E-01	2.32E-01	1.00E+02	**3E-03**	**2E-03**	3.10E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.90E+01	Y	1.15E+01	9.80E+00	4.00E+01	**3E-01**	**2E-01**	1.31E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	5.80E-02	Y	3.52E-02	2.99E-02	2.00E+00	**2E-02**	**1E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	1.61E-01	1.37E-01	2.00E+02	**8E-04**	**7E-04**	1.83E-02	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	3.95E-02	3.35E-02	8.00E+01	**5E-04**	**4E-04**	M	4.40E-06	M	**6E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0011H**	**Total Inhalation**	**2E+00**	**2E+00**	**4E-05**
		Based on NDs only	**2E+00**	**2E+00**	**3E-05**
		Based on Detects only	**4E-01**	**4E-01**	**3E-06**
		Site-related only	**3E-01**	**3E-01**	**5E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0011H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.82E+00	2.21E-01	1.33E-01	2.96E-01	9.85E-02	1.0E-08		2E-09	1E-09	3E-09	1E-09	**7E-09**
TRICHLOROETHENE	79-01-6	5.80E-02	3.35E-03	2.01E-03	4.49E-03	1.50E-03	1.0E-06	kidney	3E-09	2E-09	4E-09	1E-09	**1E-08**
TRICHLOROETHENE	79-01-6	5.80E-02	1.01E-03		2.99E-03		3.1E-06	NHL+liver	3E-09		9E-09		**1E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	3.76E-03	2.26E-03	5.03E-03	1.68E-03	4.4E-06		2E-08	1E-08	2E-08	7E-09	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0012H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	3.12E-01	2.66E-01	NA	---	---	3.55E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.01E-01	8.56E-02	2.00E+00	**5E-02**	**4E-02**	1.14E-02	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	5.47E-02	4.65E-02	3.00E+01	**2E-03**	**2E-03**	6.21E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	9.46E-01	8.04E-01	2.00E+00	**5E-01**	**4E-01**	1.07E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	4.55E-01	3.87E-01	6.00E+01	**8E-03**	**6E-03**	5.17E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	1.85E-01	1.57E-01	7.00E+00	**3E-02**	**2E-02**	2.10E-02	2.60E-05		**5E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	4.55E-01	3.87E-01	6.00E+01	**8E-03**	**6E-03**	5.17E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	5.47E-01	4.65E-01	8.00E+02	**7E-04**	**6E-04**	6.21E-02	1.10E-05		**7E-07**
BENZENE	71-43-2	6.39E-01	Y	3.88E-01	3.30E-01	3.00E+01	**1E-02**	**1E-02**	4.40E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	5.81E-01	4.94E-01	1.00E+00	**6E-01**	**5E-01**	6.60E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	3.05E-01	2.59E-01	NA	---	---	3.46E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	1.77E-01	1.50E-01	5.00E+00	**4E-02**	**3E-02**	2.01E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	2.86E-01	2.43E-01	1.00E+02	**3E-03**	**2E-03**	3.25E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.51E+00	Y	9.19E-01	7.81E-01	9.77E+01	**9E-03**	**8E-03**	1.04E-01	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	6.48E+00	Y	3.94E+00	3.34E+00	7.00E+01	**6E-02**	**5E-02**	4.47E-01	-		---
ETHYLBENZENE	100-41-4	1.13E+00	Y	6.85E-01	5.82E-01	1.00E+03	**7E-04**	**6E-04**	7.78E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	9.72E-01	8.26E-01	NA	---	---	1.10E-01	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	3.73E+00	Y	2.27E+00	1.92E+00	1.00E+02	**2E-02**	**2E-02**	2.57E-01	-		---
METHYLENE CHLORIDE	75-09-2	1.11E+00	Y	6.75E-01	5.73E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	9.98E-01	Y	6.06E-01	5.15E-01	1.00E+02	**6E-03**	**5E-03**	6.88E-02	-		---
TETRACHLOROETHENE	127-18-4	2.58E+00	Y	1.57E+00	1.33E+00	4.00E+01	**4E-02**	**3E-02**	1.78E-01	2.60E-07		**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.52E-01	1.29E-01	2.00E+00	**8E-02**	**6E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	2.14E-01	1.82E-01	2.00E+02	**1E-03**	**9E-04**	2.43E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	3.95E-02	3.35E-02	8.00E+01	**5E-04**	**4E-04**	M	4.40E-06	M	**6E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0012H**	**Total Inhalation**	**3E+00**	**2E+00**	**4E-05**
		Based on NDs only	**3E+00**	**2E+00**	**4E-05**
		Based on Detects only	**1E-01**	**1E-01**	**3E-06**
		Site-related only	**1E-01**	**1E-01**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0012H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.11E+00	6.42E-02	3.85E-02	8.60E-02	2.87E-02	1.0E-08		6E-10	4E-10	9E-10	3E-10	**2E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	1.45E-02	8.68E-03	1.93E-02	6.45E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	6E-09	**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	4.34E-03		1.29E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	3.76E-03	2.26E-03	5.03E-03	1.68E-03	4.4E-06		2E-08	1E-08	2E-08	7E-09	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0013H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	3.12E-01	2.66E-01	NA	---	---	3.55E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.01E-01	8.56E-02	2.00E+00	**5E-02**	**4E-02**	1.14E-02	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	9.50E-02	N	5.77E-02	4.90E-02	3.00E+01	**2E-03**	**2E-03**	6.55E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	9.46E-01	8.04E-01	2.00E+00	**5E-01**	**4E-01**	1.07E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	4.55E-01	3.87E-01	6.00E+01	**8E-03**	**6E-03**	5.17E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.30E-01	Y	7.89E-02	6.71E-02	7.00E+00	**1E-02**	**1E-02**	8.96E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	4.55E-01	3.87E-01	6.00E+01	**8E-03**	**6E-03**	5.17E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	5.47E-01	4.65E-01	8.00E+02	**7E-04**	**6E-04**	6.21E-02	1.10E-05		**7E-07**
BENZENE	71-43-2	6.20E-01	Y	3.77E-01	3.20E-01	3.00E+01	**1E-02**	**1E-02**	4.27E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	5.81E-01	4.94E-01	1.00E+00	**6E-01**	**5E-01**	6.60E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	3.05E-01	2.59E-01	NA	---	---	3.46E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	6.50E-01	N	3.95E-01	3.35E-01	5.00E+00	**8E-02**	**7E-02**	4.48E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	2.55E-01	2.17E-01	1.00E+02	**3E-03**	**2E-03**	2.90E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.50E-01	Y	2.13E-01	1.81E-01	9.77E+01	**2E-03**	**2E-03**	2.41E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	5.50E-01	N	3.34E-01	2.84E-01	7.00E+01	**5E-03**	**4E-03**	3.79E-02	-		---
ETHYLBENZENE	100-41-4	1.80E-01	Y	1.09E-01	9.29E-02	1.00E+03	**1E-04**	**9E-05**	1.24E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	9.72E-01	8.26E-01	NA	---	---	1.10E-01	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	2.10E+01	Y	1.28E+01	1.08E+01	2.00E+02	**6E-02**	**5E-02**	1.45E+00	-		---
M,P-XYLENE	108-38-3	1.52E+00	Y	9.23E-01	7.84E-01	1.00E+02	**9E-03**	**8E-03**	1.05E-01	-		---
METHYLENE CHLORIDE	75-09-2	2.40E+00	Y	1.46E+00	1.24E+00	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**5E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.40E-01	Y	8.50E-02	7.22E-02	1.00E+02	**9E-04**	**7E-04**	9.65E-03	-		---
TETRACHLOROETHENE	127-18-4	7.00E-02	Y	4.25E-02	3.61E-02	4.00E+01	**1E-03**	**9E-04**	4.83E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.52E-01	1.29E-01	2.00E+00	**8E-02**	**6E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	3.00E+00	Y	1.82E+00	1.55E+00	2.00E+02	**9E-03**	**8E-03**	2.07E-01	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	3.95E-02	3.35E-02	8.00E+01	**5E-04**	**4E-04**	M	4.40E-06	M	**6E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0013H**	**Total Inhalation**	**3E+00**	**2E+00**	**4E-05**
		Based on NDs only	**3E+00**	**2E+00**	**4E-05**
		Based on Detects only	**1E-01**	**1E-01**	**1E-06**
		Site-related only	**8E-02**	**7E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0013H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.40E+00	1.39E-01	8.33E-02	1.86E-01	6.19E-02	1.0E-08		1E-09	8E-10	2E-09	6E-10	**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	1.45E-02	8.68E-03	1.93E-02	6.45E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	6E-09	**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	4.34E-03		1.29E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	3.76E-03	2.26E-03	5.03E-03	1.68E-03	4.4E-06		2E-08	1E-08	2E-08	7E-09	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0017H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	3.12E-01	2.66E-01	NA	---	---	3.55E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.01E-01	8.56E-02	2.00E+00	**5E-02**	**4E-02**	1.14E-02	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	5.47E-02	4.64E-02	3.00E+01	**2E-03**	**2E-03**	6.21E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	9.83E-01	Y	5.97E-01	5.07E-01	6.00E+01	**1E-02**	**8E-03**	6.78E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	1.85E-01	1.57E-01	7.00E+00	**3E-02**	**2E-02**	2.10E-02	2.60E-05		**5E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	2.25E-01	1.91E-01	6.00E+01	**4E-03**	**3E-03**	2.55E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	2.74E-01	2.33E-01	8.00E+02	**3E-04**	**3E-04**	3.11E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	8.00E-01	Y	4.86E-01	4.13E-01	3.00E+01	**2E-02**	**1E-02**	5.52E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	3.05E-01	2.59E-01	NA	**---**	**---**	3.46E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	1.77E-01	1.50E-01	5.00E+00	**4E-02**	**3E-02**	2.01E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	2.86E-01	2.43E-01	1.00E+02	**3E-03**	**2E-03**	3.25E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.61E+00	Y	9.78E-01	8.31E-01	9.77E+01	**1E-02**	**9E-03**	1.11E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	3.30E+00	Y	2.00E+00	1.70E+00	7.00E+01	**3E-02**	**2E-02**	2.28E-01	-		**---**
ETHYLBENZENE	100-41-4	3.25E-01	N	1.98E-01	1.68E-01	1.00E+03	**2E-04**	**2E-04**	2.24E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.04E+00	Y	1.24E+00	1.05E+00	1.00E+02	**1E-02**	**1E-02**	1.41E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	8.33E-01	Y	5.06E-01	4.30E-01	6.00E+02	**8E-04**	**7E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	3.25E-01	N	1.98E-01	1.68E-01	1.00E+02	**2E-03**	**2E-03**	2.24E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.02E+01	Y	6.17E+00	5.25E+00	4.00E+01	**2E-01**	**1E-01**	7.01E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	3.92E-01	Y	2.38E-01	2.02E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	1.61E-01	1.37E-01	2.00E+02	**8E-04**	**7E-04**	1.83E-02	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	3.95E-02	3.35E-02	8.00E+01	**5E-04**	**4E-04**	M	4.40E-06	M	**6E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0017H**	**Total Inhalation**	**2E+00**	**2E+00**	**3E-05**
		Based on NDs only	**1E+00**	**1E+00**	**3E-05**
		Based on Detects only	**4E-01**	**3E-01**	**3E-06**
		Site-related only	**3E-01**	**2E-01**	**4E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0017H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.33E-01	4.82E-02	2.89E-02	6.45E-02	2.15E-02	1.0E-08		5E-10	3E-10	6E-10	2E-10	**2E-09**
TRICHLOROETHENE	79-01-6	3.92E-01	2.27E-02	1.36E-02	3.03E-02	1.01E-02	1.0E-06	kidney	2E-08	1E-08	3E-08	1E-08	**8E-08**
TRICHLOROETHENE	79-01-6	3.92E-01	6.80E-03		2.02E-02		3.1E-06	NHL+liver	2E-08		6E-08		**8E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	3.76E-03	2.26E-03	5.03E-03	1.68E-03	4.4E-06		2E-08	1E-08	2E-08	7E-09	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0018H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-01	Y	1.46E-01	1.24E-01	NA	---	---	1.65E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	4.30E-01	Y	2.61E-01	2.22E-01	2.00E+00	**1E-01**	**1E-01**	2.96E-02	3.00E-05		**9E-07**
1,4-DIOXANE	123-91-1	4.90E-01	Y	2.98E-01	2.53E-01	3.00E+01	**1E-02**	**8E-03**	3.38E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	4.60E+00	Y	2.79E+00	2.37E+00	2.00E+00	**1E+00**	**1E+00**	3.17E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	2.80E+00	Y	1.70E+00	1.44E+00	6.00E+01	**3E-02**	**2E-02**	1.93E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	9.40E-02	Y	5.71E-02	4.85E-02	9.00E+00	**6E-03**	**5E-03**	6.48E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	1.30E+00	Y	7.89E-01	6.71E-01	7.00E+00	**1E-01**	**1E-01**	8.96E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	9.00E-01	Y	5.47E-01	4.64E-01	6.00E+01	**9E-03**	**8E-03**	6.21E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.60E-01	Y	2.79E-01	2.37E-01	8.00E+02	**3E-04**	**3E-04**	3.17E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	5.60E+00	Y	3.40E+00	2.89E+00	3.00E+01	**1E-01**	**1E-01**	3.86E-01	7.80E-06		**3E-06**
BENZYL CHLORIDE	100-44-7	8.40E-01	Y	5.10E-01	4.33E-01	1.00E+00	**5E-01**	**4E-01**	5.79E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	4.50E-01	Y	2.73E-01	2.32E-01	NA	---	---	3.10E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	4.25E-01	3.61E-01	5.00E+00	**9E-02**	**7E-02**	4.83E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	2.79E-01	2.37E-01	1.00E+02	**3E-03**	**2E-03**	3.17E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	2.40E+00	Y	1.46E+00	1.24E+00	9.77E+01	**1E-02**	**1E-02**	1.65E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	4.68E+00	Y	2.84E+00	2.42E+00	7.00E+01	**4E-02**	**3E-02**	3.23E-01	-		**---**
ETHYLBENZENE	100-41-4	2.40E+00	Y	1.46E+00	1.24E+00	1.00E+03	**1E-03**	**1E-03**	1.65E-01	2.50E-06		**4E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	5.30E+00	Y	3.22E+00	2.73E+00	NA	---	---	3.65E-01	2.20E-05		**8E-06**
ISOPROPYL ALCOHOL	67-63-0	1.30E+02	Y	7.89E+01	6.71E+01	2.00E+02	**4E-01**	**3E-01**	8.96E+00	-		**---**
M,P-XYLENE	108-38-3	1.00E+01	Y	6.07E+00	5.16E+00	1.00E+02	**6E-02**	**5E-02**	6.89E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	1.70E+00	Y	1.03E+00	8.77E-01	6.00E+02	**2E-03**	**1E-03**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	8.30E+00	Y	5.04E+00	4.28E+00	3.00E+00	**2E+00**	**1E+00**	5.72E-01	3.40E-05		**2E-05**
O-XYLENE	95-47-6	3.20E+00	Y	1.94E+00	1.65E+00	1.00E+02	**2E-02**	**2E-02**	2.21E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.40E+01	Y	8.50E+00	7.22E+00	4.00E+01	**2E-01**	**2E-01**	9.65E-01	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	8.30E-01	Y	5.04E-01	4.28E-01	2.00E+00	**3E-01**	**2E-01**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	1.61E-01	1.37E-01	2.00E+02	**8E-04**	**7E-04**	1.83E-02	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	3.95E-02	3.35E-02	8.00E+01	**5E-04**	**4E-04**	M	4.40E-06	M	**6E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0018H**	**Total Inhalation**	**6E+00**	**5E+00**	**5E-05**
		Based on NDs only	**1E+00**	**1E+00**	**6E-07**
		Based on Detects only	**5E+00**	**4E+00**	**5E-05**
		Site-related only	**5E-01**	**4E-01**	**8E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0018H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.70E+00	9.83E-02	5.90E-02	1.32E-01	4.39E-02	1.0E-08		1E-09	6E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	8.30E-01	4.80E-02	2.88E-02	6.42E-02	2.14E-02	1.0E-06	kidney	5E-08	3E-08	6E-08	2E-08	**2E-07**
TRICHLOROETHENE	79-01-6	8.30E-01	1.44E-02		4.28E-02		3.1E-06	NHL+liver	4E-08		1E-07		**2E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	3.76E-03	2.26E-03	5.03E-03	1.68E-03	4.4E-06		2E-08	1E-08	2E-08	7E-09	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0023H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	3.12E-01	2.66E-01	NA	---	---	3.55E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.01E-01	8.56E-02	2.00E+00	**5E-02**	**4E-02**	1.14E-02	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	5.47E-02	4.64E-02	3.00E+01	**2E-03**	**2E-03**	6.21E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	3.70E-01	N	2.25E-01	1.91E-01	6.00E+01	**4E-03**	**3E-03**	2.55E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	1.85E-01	1.57E-01	7.00E+00	**3E-02**	**2E-02**	2.10E-02	2.60E-05		**5E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	2.25E-01	1.91E-01	6.00E+01	**4E-03**	**3E-03**	2.55E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	2.74E-01	2.33E-01	8.00E+02	**3E-04**	**3E-04**	3.11E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	1.40E+00	Y	8.50E-01	7.22E-01	3.00E+01	**3E-02**	**2E-02**	9.65E-02	7.80E-06		**8E-07**
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	3.05E-01	2.59E-01	NA	**---**	**---**	3.46E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	1.77E-01	1.50E-01	5.00E+00	**4E-02**	**3E-02**	2.01E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	2.86E-01	2.43E-01	1.00E+02	**3E-03**	**2E-03**	3.25E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.66E-01	N	2.22E-01	1.89E-01	9.77E+01	**2E-03**	**2E-03**	2.52E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	2.70E-01	N	1.64E-01	1.39E-01	7.00E+01	**2E-03**	**2E-03**	1.86E-02	-		**---**
ETHYLBENZENE	100-41-4	3.25E-01	N	1.98E-01	1.68E-01	1.00E+03	**2E-04**	**2E-04**	2.24E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.30E+00	Y	1.40E+00	1.19E+00	1.00E+02	**1E-02**	**1E-02**	1.59E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	6.40E-01	Y	3.89E-01	3.30E-01	6.00E+02	**6E-04**	**6E-04**	M	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	6.94E-01	Y	4.22E-01	3.58E-01	1.00E+02	**4E-03**	**4E-03**	4.79E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.40E+00	Y	8.50E-01	7.22E-01	4.00E+01	**2E-02**	**2E-02**	9.65E-02	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	1.35E-01	N	8.20E-02	6.97E-02	2.00E+00	**4E-02**	**3E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	1.61E-01	1.37E-01	2.00E+02	**8E-04**	**7E-04**	1.83E-02	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	3.95E-02	3.35E-02	8.00E+01	**5E-04**	**4E-04**	M	4.40E-06	M	**6E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0023H**	**Total Inhalation**	**2E+00**	**1E+00**	**3E-05**
		Based on NDs only	**2E+00**	**1E+00**	**3E-05**
		Based on Detects only	**7E-02**	**6E-02**	**8E-07**
		Site-related only	**6E-02**	**5E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0023H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.40E-01	3.70E-02	2.22E-02	4.95E-02	1.65E-02	1.0E-08		4E-10	2E-10	5E-10	2E-10	**1E-09**
TRICHLOROETHENE	79-01-6	1.35E-01	7.81E-03	4.68E-03	1.04E-02	3.48E-03	1.0E-06	kidney	8E-09	5E-09	1E-08	3E-09	**3E-08**
TRICHLOROETHENE	79-01-6	1.35E-01	2.34E-03		6.97E-03		3.1E-06	NHL+liver	7E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	3.76E-03	2.26E-03	5.03E-03	1.68E-03	4.4E-06		2E-08	1E-08	2E-08	7E-09	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0025H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	3.12E-01	2.66E-01	NA	---	---	3.55E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.01E-01	8.56E-02	2.00E+00	**5E-02**	**4E-02**	1.14E-02	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	2.34E+00	Y	1.42E+00	1.21E+00	3.00E+01	**5E-02**	**4E-02**	1.61E-01	5.00E-06		**8E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	9.46E-01	8.04E-01	2.00E+00	**5E-01**	**4E-01**	1.07E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.60E-01	Y	1.58E-01	1.34E-01	6.00E+01	**3E-03**	**2E-03**	1.79E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	3.30E-01	Y	2.00E-01	1.70E-01	7.00E+00	**3E-02**	**2E-02**	2.28E-02	2.60E-05		**6E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	4.55E-01	3.87E-01	6.00E+01	**8E-03**	**6E-03**	5.17E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	2.10E+00	Y	1.28E+00	1.08E+00	8.00E+02	**2E-03**	**1E-03**	1.45E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	8.30E-01	Y	5.04E-01	4.28E-01	3.00E+01	**2E-02**	**1E-02**	5.72E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	5.81E-01	4.94E-01	1.00E+00	**6E-01**	**5E-01**	6.60E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	3.05E-01	2.59E-01	NA	---	---	3.46E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	4.86E-01	4.13E-01	5.00E+00	**1E-01**	**8E-02**	5.52E-02	-		---
CARBON TETRACHLORIDE	56-23-5	5.60E-01	Y	3.40E-01	2.89E-01	1.00E+02	**3E-03**	**3E-03**	3.86E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.90E+00	Y	1.15E+00	9.80E-01	9.77E+01	**1E-02**	**1E-02**	1.31E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	3.90E+00	Y	2.37E+00	2.01E+00	7.00E+01	**3E-02**	**3E-02**	2.69E-01	-		---
ETHYLBENZENE	100-41-4	2.10E-01	Y	1.28E-01	1.08E-01	1.00E+03	**1E-04**	**1E-04**	1.45E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	9.72E-01	8.26E-01	NA	---	---	1.10E-01	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	7.70E+00	Y	4.68E+00	3.97E+00	2.00E+02	**2E-02**	**2E-02**	5.31E-01	-		---
M,P-XYLENE	108-38-3	1.30E+00	Y	7.89E-01	6.71E-01	1.00E+02	**8E-03**	**7E-03**	8.96E-02	-		---
METHYLENE CHLORIDE	75-09-2	3.33E+00	Y	2.02E+00	1.72E+00	6.00E+02	**3E-03**	**3E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	8.80E-02	Y	5.34E-02	4.54E-02	3.00E+00	**2E-02**	**2E-02**	6.07E-03	3.40E-05		**2E-07**
O-XYLENE	95-47-6	3.10E-01	Y	1.88E-01	1.60E-01	1.00E+02	**2E-03**	**2E-03**	2.14E-02	-		---
TETRACHLOROETHENE	127-18-4	4.40E-01	Y	2.67E-01	2.27E-01	4.00E+01	**7E-03**	**6E-03**	3.03E-02	2.60E-07		**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.52E-01	1.29E-01	2.00E+00	**8E-02**	**6E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	2.14E-01	1.82E-01	2.00E+02	**1E-03**	**9E-04**	2.43E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	3.95E-02	3.35E-02	8.00E+01	**5E-04**	**4E-04**	M	4.40E-06	M	**6E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0025H**	**Total Inhalation**	**3E+00**	**2E+00**	**4E-05**
		Based on NDs only	**3E+00**	**2E+00**	**3E-05**
		Based on Detects only	**2E-01**	**2E-01**	**7E-06**
		Site-related only	**1E-01**	**1E-01**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0025H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.33E+00	1.93E-01	1.16E-01	2.58E-01	8.60E-02	1.0E-08		2E-09	1E-09	3E-09	9E-10	**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	1.45E-02	8.68E-03	1.93E-02	6.45E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	6E-09	**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	4.34E-03		1.29E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	3.76E-03	2.26E-03	5.03E-03	1.68E-03	4.4E-06		2E-08	1E-08	2E-08	7E-09	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0026H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	3.12E-01	2.66E-01	NA	---	---	3.55E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.01E-01	8.56E-02	2.00E+00	**5E-02**	**4E-02**	1.14E-02	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	2.60E-01	Y	1.58E-01	1.34E-01	3.00E+01	**5E-03**	**4E-03**	1.79E-02	5.00E-06		**9E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.80E-01	Y	5.34E-01	4.54E-01	2.00E-01	**3E+00**	**2E+00**	6.07E-02	1.60E-05		**1E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	9.46E-01	8.04E-01	2.00E+00	**5E-01**	**4E-01**	1.07E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E+00	Y	9.72E-01	8.26E-01	6.00E+01	**2E-02**	**1E-02**	1.10E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	3.00E+00	Y	1.82E+00	1.55E+00	7.00E+00	**3E-01**	**2E-01**	2.07E-01	2.60E-05		**5E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	2.50E-01	Y	1.52E-01	1.29E-01	6.00E+01	**3E-03**	**2E-03**	1.72E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	8.40E-02	Y	5.10E-02	4.33E-02	8.00E+02	**6E-05**	**5E-05**	5.79E-03	1.10E-05		**6E-08**
BENZENE	71-43-2	7.70E-01	Y	4.68E-01	3.97E-01	3.00E+01	**2E-02**	**1E-02**	5.31E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	5.81E-01	4.94E-01	1.00E+00	**6E-01**	**5E-01**	6.60E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	6.10E-01	Y	3.70E-01	3.15E-01	NA	---	---	4.21E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	4.86E-01	4.13E-01	5.00E+00	**1E-01**	**8E-02**	5.52E-02	-		---
CARBON TETRACHLORIDE	56-23-5	5.20E-01	Y	3.16E-01	2.68E-01	1.00E+02	**3E-03**	**3E-03**	3.59E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	2.60E+00	Y	1.58E+00	1.34E+00	9.77E+01	**2E-02**	**1E-02**	1.79E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	5.10E+00	Y	3.10E+00	2.63E+00	7.00E+01	**4E-02**	**4E-02**	3.52E-01	-		---
ETHYLBENZENE	100-41-4	2.30E+00	Y	1.40E+00	1.19E+00	1.00E+03	**1E-03**	**1E-03**	1.59E-01	2.50E-06		**4E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	9.72E-01	8.26E-01	NA	---	---	1.10E-01	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	2.90E+01	Y	1.76E+01	1.50E+01	2.00E+02	**9E-02**	**7E-02**	2.00E+00	-		---
M,P-XYLENE	108-38-3	9.12E+00	Y	5.54E+00	4.71E+00	1.00E+02	**6E-02**	**5E-02**	6.29E-01	-		---
METHYLENE CHLORIDE	75-09-2	2.22E+00	Y	1.35E+00	1.15E+00	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**4E-09**
NAPHTHALENE	91-20-3	3.00E-02	N	1.82E-02	1.55E-02	3.00E+00	**6E-03**	**5E-03**	2.07E-03	3.40E-05		**7E-08**
O-XYLENE	95-47-6	2.10E+00	Y	1.28E+00	1.08E+00	1.00E+02	**1E-02**	**1E-02**	1.45E-01	-		---
TETRACHLOROETHENE	127-18-4	1.20E+01	Y	7.29E+00	6.19E+00	4.00E+01	**2E-01**	**2E-01**	8.27E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	Y	1.52E-01	1.29E-01	2.00E+00	**8E-02**	**6E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	2.14E-01	1.82E-01	2.00E+02	**1E-03**	**9E-04**	2.43E-02	-		---
VINYL CHLORIDE	75-01-4	1.60E-02	Y	9.72E-03	8.26E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**1E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0026H**	**Total Inhalation**	**5E+00**	**4E+00**	**5E-05**
		Based on NDs only	**1E+00**	**1E+00**	**3E-05**
		Based on Detects only	**3E+00**	**3E+00**	**1E-05**
		Site-related only	**3E-01**	**2E-01**	**4E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0026H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.22E+00	1.28E-01	7.71E-02	1.72E-01	5.73E-02	1.0E-08		1E-09	8E-10	2E-09	6E-10	**4E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	1.45E-02	8.68E-03	1.93E-02	6.45E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	6E-09	**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	4.34E-03		1.29E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	1.60E-02	9.25E-04	5.55E-04	1.24E-03	4.13E-04	4.4E-06		4E-09	2E-09	5E-09	2E-09	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0027H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	3.12E-01	2.66E-01	NA	---	---	3.55E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.01E-01	8.56E-02	2.00E+00	**5E-02**	**4E-02**	1.14E-02	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	5.47E-02	4.65E-02	3.00E+01	**2E-03**	**2E-03**	6.21E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	9.46E-01	8.04E-01	2.00E+00	**5E-01**	**4E-01**	1.07E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	4.55E-01	3.87E-01	6.00E+01	**8E-03**	**6E-03**	5.17E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	3.11E+00	Y	1.89E+00	1.61E+00	7.00E+00	**3E-01**	**2E-01**	2.15E-01	2.60E-05		**6E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	4.55E-01	3.87E-01	6.00E+01	**8E-03**	**6E-03**	5.17E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	3.42E+00	Y	2.08E+00	1.77E+00	8.00E+02	**3E-03**	**2E-03**	2.36E-01	1.10E-05		**3E-06**
BENZENE	71-43-2	7.34E-01	Y	4.46E-01	3.79E-01	3.00E+01	**1E-02**	**1E-02**	5.06E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	5.81E-01	4.94E-01	1.00E+00	**6E-01**	**5E-01**	6.60E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	3.05E-01	2.59E-01	NA	---	---	3.46E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	1.77E-01	1.50E-01	5.00E+00	**4E-02**	**3E-02**	2.01E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	2.86E-01	2.43E-01	1.00E+02	**3E-03**	**2E-03**	3.25E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.66E-01	N	2.22E-01	1.89E-01	9.77E+01	**2E-03**	**2E-03**	2.52E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	1.10E+00	Y	6.68E-01	5.68E-01	7.00E+01	**1E-02**	**8E-03**	7.58E-02	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	1.98E-01	1.68E-01	1.00E+03	**2E-04**	**2E-04**	2.24E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	9.72E-01	8.26E-01	NA	---	---	1.10E-01	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.35E+00	Y	8.20E-01	6.97E-01	1.00E+02	**8E-03**	**7E-03**	9.31E-02	-		---
METHYLENE CHLORIDE	75-09-2	1.25E+00	Y	7.59E-01	6.45E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	1.98E-01	1.68E-01	1.00E+02	**2E-03**	**2E-03**	2.24E-02	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.13E-01	1.81E-01	4.00E+01	**5E-03**	**5E-03**	2.41E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.52E-01	1.29E-01	2.00E+00	**8E-02**	**6E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	2.14E-01	1.82E-01	2.00E+02	**1E-03**	**9E-04**	2.43E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	3.95E-02	3.35E-02	8.00E+01	**5E-04**	**4E-04**	M	4.40E-06	M	**6E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0027H**	**Total Inhalation**	**3E+00**	**2E+00**	**4E-05**
		Based on NDs only	**3E+00**	**2E+00**	**4E-05**
		Based on Detects only	**3E-01**	**3E-01**	**9E-06**
		Site-related only	**8E-02**	**7E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0027H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.25E+00	7.23E-02	4.34E-02	9.67E-02	3.22E-02	1.0E-08		7E-10	4E-10	1E-09	3E-10	**2E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	1.45E-02	8.68E-03	1.93E-02	6.45E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	6E-09	**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	4.34E-03		1.29E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	3.76E-03	2.26E-03	5.03E-03	1.68E-03	4.4E-06		2E-08	1E-08	2E-08	7E-09	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0029H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	3.12E-01	2.66E-01	NA	---	---	3.55E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.01E-01	8.56E-02	2.00E+00	**5E-02**	**4E-02**	1.14E-02	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	2.80E-01	Y	1.70E-01	1.44E-01	3.00E+01	**6E-03**	**5E-03**	1.93E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	9.46E-01	8.04E-01	2.00E+00	**5E-01**	**4E-01**	1.07E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E-01	Y	9.72E-02	8.26E-02	6.00E+01	**2E-03**	**1E-03**	1.10E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	7.90E-02	Y	4.80E-02	4.08E-02	7.00E+00	**7E-03**	**6E-03**	5.45E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	4.55E-01	3.87E-01	6.00E+01	**8E-03**	**6E-03**	5.17E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	5.47E-01	4.65E-01	8.00E+02	**7E-04**	**6E-04**	6.21E-02	1.10E-05		**7E-07**
BENZENE	71-43-2	1.31E+00	Y	7.95E-01	6.75E-01	3.00E+01	**3E-02**	**2E-02**	9.03E-02	7.80E-06		**7E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	5.81E-01	4.94E-01	1.00E+00	**6E-01**	**5E-01**	6.60E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	3.05E-01	2.59E-01	NA	---	---	3.46E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	4.25E-01	3.61E-01	5.00E+00	**9E-02**	**7E-02**	4.83E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	2.43E-01	2.06E-01	1.00E+02	**2E-03**	**2E-03**	2.76E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.00E+00	Y	6.07E-01	5.16E-01	9.77E+01	**6E-03**	**5E-03**	6.89E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	5.50E-01	N	3.34E-01	2.84E-01	7.00E+01	**5E-03**	**4E-03**	3.79E-02	-		---
ETHYLBENZENE	100-41-4	1.80E-01	Y	1.09E-01	9.29E-02	1.00E+03	**1E-04**	**9E-05**	1.24E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	9.72E-01	8.26E-01	NA	---	---	1.10E-01	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	1.70E+01	Y	1.03E+01	8.77E+00	2.00E+02	**5E-02**	**4E-02**	1.17E+00	-		---
M,P-XYLENE	108-38-3	2.21E+00	Y	1.34E+00	1.14E+00	1.00E+02	**1E-02**	**1E-02**	1.52E-01	-		---
METHYLENE CHLORIDE	75-09-2	1.91E+01	Y	1.16E+01	9.85E+00	6.00E+02	**2E-02**	**2E-02**	M	1.00E-08	M	**4E-08**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.80E-01	Y	1.09E-01	9.29E-02	1.00E+02	**1E-03**	**9E-04**	1.24E-02	-		---
TETRACHLOROETHENE	127-18-4	6.58E+00	Y	4.00E+00	3.40E+00	4.00E+01	**1E-01**	**8E-02**	4.54E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	3.70E-02	Y	2.25E-02	1.91E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	2.14E-01	1.82E-01	2.00E+02	**1E-03**	**9E-04**	2.43E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	3.95E-02	3.35E-02	8.00E+01	**5E-04**	**4E-04**	M	4.40E-06	M	**6E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0029H**	**Total Inhalation**	**3E+00**	**2E+00**	**4E-05**
		Based on NDs only	**3E+00**	**2E+00**	**4E-05**
		Based on Detects only	**2E-01**	**2E-01**	**3E-06**
		Site-related only	**1E-01**	**1E-01**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0029H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.91E+01	1.10E+00	6.63E-01	1.48E+00	4.93E-01	1.0E-08		1E-08	7E-09	1E-08	5E-09	**4E-08**
TRICHLOROETHENE	79-01-6	3.70E-02	2.14E-03	1.28E-03	2.86E-03	9.55E-04	1.0E-06	kidney	2E-09	1E-09	3E-09	1E-09	**7E-09**
TRICHLOROETHENE	79-01-6	3.70E-02	6.42E-04		1.91E-03		3.1E-06	NHL+liver	2E-09		6E-09		**8E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	3.76E-03	2.26E-03	5.03E-03	1.68E-03	4.4E-06		2E-08	1E-08	2E-08	7E-09	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0030H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	3.12E-01	2.66E-01	NA	---	---	3.55E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.01E-01	8.56E-02	2.00E+00	**5E-02**	**4E-02**	1.14E-02	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	6.76E-01	5.74E-01	2.00E+00	**3E-01**	**3E-01**	7.67E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.21E+00	Y	1.34E+00	1.14E+00	6.00E+01	**2E-02**	**2E-02**	1.52E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	9.30E-01	Y	5.65E-01	4.80E-01	7.00E+00	**8E-02**	**7E-02**	6.41E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	9.00E-01	Y	5.47E-01	4.64E-01	6.00E+01	**9E-03**	**8E-03**	6.21E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	2.74E-01	2.33E-01	8.00E+02	**3E-04**	**3E-04**	3.11E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	1.12E+00	Y	6.79E-01	5.77E-01	3.00E+01	**2E-02**	**2E-02**	7.71E-02	7.80E-06		**6E-07**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	4.86E-01	4.13E-01	1.00E+00	**5E-01**	**4E-01**	5.52E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	3.05E-01	2.59E-01	NA	---	---	3.46E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	1.77E-01	1.50E-01	5.00E+00	**4E-02**	**3E-02**	2.01E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	2.86E-01	2.43E-01	1.00E+02	**3E-03**	**2E-03**	3.25E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.66E-01	N	2.22E-01	1.89E-01	9.77E+01	**2E-03**	**2E-03**	2.52E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	3.70E+00	Y	2.25E+00	1.91E+00	7.00E+01	**3E-02**	**3E-02**	2.55E-01	-		---
ETHYLBENZENE	100-41-4	1.13E+00	Y	6.85E-01	5.82E-01	1.00E+03	**7E-04**	**6E-04**	7.78E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	9.72E-01	8.26E-01	NA	---	---	1.10E-01	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	4.80E+00	Y	2.91E+00	2.48E+00	1.00E+02	**3E-02**	**2E-02**	3.31E-01	-		---
METHYLENE CHLORIDE	75-09-2	1.11E+00	Y	6.75E-01	5.73E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.60E+00	Y	9.72E-01	8.26E-01	1.00E+02	**1E-02**	**8E-03**	1.10E-01	-		---
TETRACHLOROETHENE	127-18-4	5.90E+00	Y	3.58E+00	3.04E+00	4.00E+01	**9E-02**	**8E-02**	4.07E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	4.05E-01	N	2.46E-01	2.09E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	1.61E-01	1.37E-01	2.00E+02	**8E-04**	**7E-04**	1.83E-02	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	1.16E-01	9.89E-02	8.00E+01	**1E-03**	**1E-03**	M	4.40E-06	M	**2E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0030H**	**Total Inhalation**	**3E+00**	**2E+00**	**4E-05**
		Based on NDs only	**2E+00**	**2E+00**	**4E-05**
		Based on Detects only	**3E-01**	**3E-01**	**3E-06**
		Site-related only	**2E-01**	**2E-01**	**4E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0030H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.11E+00	6.42E-02	3.85E-02	8.60E-02	2.87E-02	1.0E-08		6E-10	4E-10	9E-10	3E-10	**2E-09**
TRICHLOROETHENE	79-01-6	4.05E-01	2.34E-02	1.41E-02	3.13E-02	1.04E-02	1.0E-06	kidney	2E-08	1E-08	3E-08	1E-08	**8E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	7.03E-03		2.09E-02		3.1E-06	NHL+liver	2E-08		6E-08		**9E-08**
VINYL CHLORIDE	75-01-4	1.92E-01	1.11E-02	6.65E-03	1.48E-02	4.94E-03	4.4E-06		5E-08	3E-08	7E-08	2E-08	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0036H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	3.12E-01	2.66E-01	NA	---	---	3.55E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.01E-01	8.56E-02	2.00E+00	**5E-02**	**4E-02**	1.14E-02	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	6.76E-01	5.74E-01	2.00E+00	**3E-01**	**3E-01**	7.67E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.70E-01	N	2.25E-01	1.91E-01	6.00E+01	**4E-03**	**3E-03**	2.55E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	1.85E-01	1.57E-01	7.00E+00	**3E-02**	**2E-02**	2.10E-02	2.60E-05		**5E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	2.25E-01	1.91E-01	6.00E+01	**4E-03**	**3E-03**	2.55E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	2.74E-01	2.33E-01	8.00E+02	**3E-04**	**3E-04**	3.11E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	1.15E+00	Y	6.98E-01	5.93E-01	3.00E+01	**2E-02**	**2E-02**	7.93E-02	7.80E-06		**6E-07**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	4.86E-01	4.13E-01	1.00E+00	**5E-01**	**4E-01**	5.52E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	3.05E-01	2.59E-01	NA	---	---	3.46E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	1.77E-01	1.50E-01	5.00E+00	**4E-02**	**3E-02**	2.01E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	2.86E-01	2.43E-01	1.00E+02	**3E-03**	**2E-03**	3.25E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.10E+00	Y	6.68E-01	5.68E-01	9.77E+01	**7E-03**	**6E-03**	7.58E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	6.12E+00	Y	3.72E+00	3.16E+00	7.00E+01	**5E-02**	**5E-02**	4.22E-01	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	1.98E-01	1.68E-01	1.00E+03	**2E-04**	**2E-04**	2.24E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	9.72E-01	8.26E-01	NA	---	---	1.10E-01	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	8.30E-01	Y	5.04E-01	4.28E-01	1.00E+02	**5E-03**	**4E-03**	5.72E-02	-		---
METHYLENE CHLORIDE	75-09-2	1.10E+00	Y	6.68E-01	5.68E-01	6.00E+02	**1E-03**	**9E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	1.98E-01	1.68E-01	1.00E+02	**2E-03**	**2E-03**	2.24E-02	-		---
TETRACHLOROETHENE	127-18-4	3.60E+00	Y	2.19E+00	1.86E+00	4.00E+01	**5E-02**	**5E-02**	2.48E-01	2.60E-07		**6E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	N	2.46E-01	2.09E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	1.61E-01	1.37E-01	2.00E+02	**8E-04**	**7E-04**	1.83E-02	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	1.16E-01	9.89E-02	8.00E+01	**1E-03**	**1E-03**	M	4.40E-06	M	**2E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0036H**	**Total Inhalation**	**3E+00**	**2E+00**	**4E-05**
		Based on NDs only	**2E+00**	**2E+00**	**4E-05**
		Based on Detects only	**1E-01**	**1E-01**	**2E-06**
		Site-related only	**2E-01**	**2E-01**	**4E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0036H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.10E+00	6.36E-02	3.82E-02	8.51E-02	2.84E-02	1.0E-08		6E-10	4E-10	9E-10	3E-10	**2E-09**
TRICHLOROETHENE	79-01-6	4.05E-01	2.34E-02	1.41E-02	3.13E-02	1.04E-02	1.0E-06	kidney	2E-08	1E-08	3E-08	1E-08	**8E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	7.03E-03		2.09E-02		3.1E-06	NHL+liver	2E-08		6E-08		**9E-08**
VINYL CHLORIDE	75-01-4	1.92E-01	1.11E-02	6.65E-03	1.48E-02	4.94E-03	4.4E-06		5E-08	3E-08	7E-08	2E-08	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0037H**

Pathway:
Inhalation of Indoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)		6.89E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-01	Y	6.68E-02	5.68E-02	NA	---	---	7.58E-03	5.80E-05		**4E-07**
1,3-BUTADIENE	106-99-0	3.00E-01	Y	1.82E-01	1.55E-01	2.00E+00	**9E-02**	**8E-02**	2.07E-02	3.00E-05		**6E-07**
1,4-DIOXANE	123-91-1	1.70E+00	Y	1.03E+00	8.77E-01	3.00E+01	**3E-02**	**3E-02**	1.17E-01	5.00E-06		**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.60E+00	N	9.72E-01	8.26E-01	2.00E+00	**5E-01**	**4E-01**	1.10E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.40E+00	Y	3.28E+00	2.79E+00	6.00E+01	**5E-02**	**5E-02**	3.72E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	7.00E+00	Y	4.25E+00	3.61E+00	7.00E+00	**6E-01**	**5E-01**	4.83E-01	2.60E-05		**1E-05**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	1.20E+00	Y	7.29E-01	6.19E-01	6.00E+01	**1E-02**	**1E-02**	8.27E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	2.74E-01	2.33E-01	8.00E+02	**3E-04**	**3E-04**	3.11E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	3.70E+00	Y	2.25E+00	1.91E+00	3.00E+01	**7E-02**	**6E-02**	2.55E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	1.20E-01	N	7.29E-02	6.19E-02	1.00E+00	**7E-02**	**6E-02**	8.27E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	5.70E-01	Y	3.46E-01	2.94E-01	NA	---	---	3.93E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	4.00E-01	N	2.43E-01	2.06E-01	5.00E+00	**5E-02**	**4E-02**	2.76E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.50E-01	Y	3.34E-01	2.84E-01	1.00E+02	**3E-03**	**3E-03**	3.79E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.20E+00	Y	1.94E+00	1.65E+00	9.77E+01	**2E-02**	**2E-02**	2.21E-01	2.30E-05		**5E-06**
ETHYL ACETATE	141-78-6	2.40E+00	Y	1.46E+00	1.24E+00	7.00E+01	**2E-02**	**2E-02**	1.65E-01	-		**---**
ETHYLBENZENE	100-41-4	3.80E+00	Y	2.31E+00	1.96E+00	1.00E+03	**2E-03**	**2E-03**	2.62E-01	2.50E-06		**7E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	2.15E+00	N	1.31E+00	1.11E+00	NA	---	---	1.48E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	7.50E+01	Y	4.55E+01	3.87E+01	2.00E+02	**2E-01**	**2E-01**	5.17E+00	-		**---**
M,P-XYLENE	108-38-3	1.60E+01	Y	9.72E+00	8.26E+00	1.00E+02	**1E-01**	**8E-02**	1.10E+00	-		**---**
METHYLENE CHLORIDE	75-09-2	8.20E-01	Y	4.98E-01	4.23E-01	6.00E+02	**8E-04**	**7E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	7.20E-02	Y	4.37E-02	3.72E-02	3.00E+00	**1E-02**	**1E-02**	4.96E-03	3.40E-05		**2E-07**
O-XYLENE	95-47-6	5.60E+00	Y	3.40E+00	2.89E+00	1.00E+02	**3E-02**	**3E-02**	3.86E-01	-		**---**
TETRACHLOROETHENE	127-18-4	8.70E+00	Y	5.28E+00	4.49E+00	4.00E+01	**1E-01**	**1E-01**	6.00E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	1.00E-01	Y	6.07E-02	5.16E-02	2.00E+00	**3E-02**	**3E-02**	M	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	1.61E-01	1.37E-01	2.00E+02	**8E-04**	**7E-04**	1.83E-02	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	3.95E-02	3.35E-02	8.00E+01	**5E-04**	**4E-04**	M	4.40E-06	M	**6E-08**

			HI$_{child}$	**HI$_{adult}$**	**Risk$_{lifetime}$**
Residential	**0037H**	**Total Inhalation**	**3E+00**	**3E+00**	**5E-05**
		Based on NDs only	**2E+00**	**2E+00**	**3E-05**
		Based on Detects only	**1E+00**	**1E+00**	**2E-05**
		Site-related only	**2E-01**	**2E-01**	**8E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0037H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.20E-01	4.74E-02	2.85E-02	6.35E-02	2.12E-02	1.0E-08		5E-10	3E-10	6E-10	2E-10	**2E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	5.78E-03	3.47E-03	7.74E-03	2.58E-03	1.0E-06	kidney	6E-09	3E-09	8E-09	3E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.00E-01	1.74E-03		5.16E-03		3.1E-06	NHL+liver	5E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	3.76E-03	2.26E-03	5.03E-03	1.68E-03	4.4E-06		2E-08	1E-08	2E-08	7E-09	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0038H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	3.12E-01	2.66E-01	NA	---	---	3.55E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.01E-01	8.56E-02	2.00E+00	**5E-02**	**4E-02**	1.14E-02	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	5.47E-02	4.65E-02	3.00E+01	**2E-03**	**2E-03**	6.21E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	9.46E-01	8.04E-01	2.00E+00	**5E-01**	**4E-01**	1.07E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	4.55E-01	3.87E-01	6.00E+01	**8E-03**	**6E-03**	5.17E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	1.85E-01	1.57E-01	7.00E+00	**3E-02**	**2E-02**	2.10E-02	2.60E-05		**5E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	4.55E-01	3.87E-01	6.00E+01	**8E-03**	**6E-03**	5.17E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	5.47E-01	4.65E-01	8.00E+02	**7E-04**	**6E-04**	6.21E-02	1.10E-05		**7E-07**
BENZENE	71-43-2	5.11E-01	Y	3.10E-01	2.64E-01	3.00E+01	**1E-02**	**9E-03**	3.52E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	5.81E-01	4.94E-01	1.00E+00	**6E-01**	**5E-01**	6.60E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	3.05E-01	2.59E-01	NA	---	---	3.46E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	1.77E-01	1.50E-01	5.00E+00	**4E-02**	**3E-02**	2.01E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	2.86E-01	2.43E-01	1.00E+02	**3E-03**	**2E-03**	3.25E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.42E+00	Y	8.59E-01	7.30E-01	9.77E+01	**9E-03**	**7E-03**	9.76E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	5.50E-01	N	3.34E-01	2.84E-01	7.00E+01	**5E-03**	**4E-03**	3.79E-02	-		**---**
ETHYLBENZENE	100-41-4	3.25E-01	N	1.98E-01	1.68E-01	1.00E+03	**2E-04**	**2E-04**	2.24E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	9.72E-01	8.26E-01	NA	---	---	1.10E-01	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
M,P-XYLENE	108-38-3	1.30E+00	Y	7.89E-01	6.71E-01	1.00E+02	**8E-03**	**7E-03**	8.96E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	3.12E+00	Y	1.90E+00	1.61E+00	6.00E+02	**3E-03**	**3E-03**	M	1.00E-08	M	**6E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	3.25E-01	N	1.98E-01	1.68E-01	1.00E+02	**2E-03**	**2E-03**	2.24E-02	-		**---**
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.13E-01	1.81E-01	4.00E+01	**5E-03**	**5E-03**	2.41E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.52E-01	1.29E-01	2.00E+00	**8E-02**	**6E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	2.14E-01	1.82E-01	2.00E+02	**1E-03**	**9E-04**	2.43E-02	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	3.95E-02	3.35E-02	8.00E+01	**5E-04**	**4E-04**	M	4.40E-06	M	**6E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0038H**	**Total Inhalation**	**3E+00**	**2E+00**	**4E-05**
		Based on NDs only	**3E+00**	**2E+00**	**4E-05**
		Based on Detects only	**3E-02**	**3E-02**	**3E-06**
		Site-related only	**8E-02**	**7E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0038H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.12E+00	1.81E-01	1.08E-01	2.42E-01	8.06E-02	1.0E-08		2E-09	1E-09	2E-09	8E-10	**6E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	1.45E-02	8.68E-03	1.93E-02	6.45E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	6E-09	**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	4.34E-03		1.29E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	3.76E-03	2.26E-03	5.03E-03	1.68E-03	4.4E-06		2E-08	1E-08	2E-08	7E-09	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0040H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	3.12E-01	2.66E-01	NA	---	---	3.55E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.44E+00	Y	8.73E-01	7.42E-01	2.00E+00	**4E-01**	**4E-01**	9.91E-02	3.00E-05		**3E-06**
1,4-DIOXANE	123-91-1	9.00E-02	N	5.47E-02	4.64E-02	3.00E+01	**2E-03**	**2E-03**	6.21E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.10E+00	Y	2.49E+00	2.12E+00	6.00E+01	**4E-02**	**4E-02**	2.83E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	1.85E-01	1.57E-01	7.00E+00	**3E-02**	**2E-02**	2.10E-02	2.60E-05		**5E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	1.10E+00	Y	6.68E-01	5.68E-01	6.00E+01	**1E-02**	**9E-03**	7.58E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	2.74E-01	2.33E-01	8.00E+02	**3E-04**	**3E-04**	3.11E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	2.60E+00	Y	1.58E+00	1.34E+00	3.00E+01	**5E-02**	**4E-02**	1.79E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	3.05E-01	2.59E-01	NA	---	---	3.46E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	1.77E-01	1.50E-01	5.00E+00	**4E-02**	**3E-02**	2.01E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	2.86E-01	2.43E-01	1.00E+02	**3E-03**	**2E-03**	3.25E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	4.80E+00	Y	2.91E+00	2.48E+00	9.77E+01	**3E-02**	**3E-02**	3.31E-01	2.30E-05		**8E-06**
ETHYL ACETATE	141-78-6	1.30E+00	Y	7.89E-01	6.71E-01	7.00E+01	**1E-02**	**1E-02**	8.96E-02	-		---
ETHYLBENZENE	100-41-4	2.20E+00	Y	1.34E+00	1.14E+00	1.00E+03	**1E-03**	**1E-03**	1.52E-01	2.50E-06		**4E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	7.90E+00	Y	4.80E+00	4.08E+00	1.00E+02	**5E-02**	**4E-02**	5.45E-01	-		---
METHYLENE CHLORIDE	75-09-2	2.60E+02	Y	1.58E+02	1.34E+02	6.00E+02	**3E-01**	**2E-01**	M	1.00E-08	M	**5E-07**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.34E+00	Y	1.42E+00	1.21E+00	1.00E+02	**1E-02**	**1E-02**	1.62E-01	-		---
TETRACHLOROETHENE	127-18-4	1.53E+02	Y	9.30E+01	7.90E+01	4.00E+01	**2E+00**	**2E+00**	1.06E+01	2.60E-07		**3E-06**
TRICHLOROETHENE	79-01-6	1.26E+01	Y	7.65E+00	6.50E+00	2.00E+00	**4E+00**	**3E+00**	M	4.10E-06	M	**5E-06**
VINYL ACETATE	108-05-4	2.65E-01	N	1.61E-01	1.37E-01	2.00E+02	**8E-04**	**7E-04**	1.83E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	3.95E-02	3.35E-02	8.00E+01	**5E-04**	**4E-04**	M	4.40E-06	M	**6E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0040H**	**Total Inhalation**	**8E+00**	**7E+00**	**5E-05**
		Based on NDs only	**1E+00**	**1E+00**	**3E-05**
		Based on Detects only	**7E+00**	**6E+00**	**2E-05**
		Site-related only	**6E+00**	**5E+00**	**8E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0040H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.60E+02	1.50E+01	9.02E+00	2.01E+01	6.71E+00	1.0E-08		2E-07	9E-08	2E-07	7E-08	**5E-07**
TRICHLOROETHENE	79-01-6	1.26E+01	7.29E-01	4.37E-01	9.75E-01	3.25E-01	1.0E-06	kidney	7E-07	4E-07	1E-06	3E-07	**2E-06**
TRICHLOROETHENE	79-01-6	1.26E+01	2.19E-01		6.50E-01		3.1E-06	NHL+liver	7E-07		2E-06		**3E-06**
VINYL CHLORIDE	75-01-4	6.50E-02	3.76E-03	2.26E-03	5.03E-03	1.68E-03	4.4E-06		2E-08	1E-08	2E-08	7E-09	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0041H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	6.38E-03	5.42E-03	NA	---	---	7.24E-04	5.80E-05		**4E-08**
1,3-BUTADIENE	106-99-0	4.90E-02	N	2.98E-02	2.53E-02	2.00E+00	**1E-02**	**1E-02**	3.38E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	7.00E-02	N	4.25E-02	3.61E-02	3.00E+01	**1E-03**	**1E-03**	4.83E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	4.25E-03	3.61E-03	2.00E-01	**2E-02**	**2E-02**	4.83E-04	1.60E-05		**8E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.80E-01	N	2.91E-01	2.48E-01	2.00E+00	**1E-01**	**1E-01**	3.31E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E-01	Y	8.50E-02	7.22E-02	6.00E+01	**1E-03**	**1E-03**	9.65E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	2.00E-02	1.70E-02	9.00E+00	**2E-03**	**2E-03**	2.28E-03	6.00E-04		**1E-06**
1,2-DICHLOROETHANE	107-06-2	5.10E-01	Y	3.10E-01	2.63E-01	7.00E+00	**4E-02**	**4E-02**	3.52E-02	2.60E-05		**9E-07**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	5.47E-02	4.64E-02	4.00E+00	**1E-02**	**1E-02**	6.21E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	3.64E-02	3.10E-02	6.00E+01	**6E-04**	**5E-04**	4.14E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	3.04E-02	2.58E-02	8.00E+02	**4E-05**	**3E-05**	3.45E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	4.80E-01	Y	2.91E-01	2.48E-01	3.00E+01	**1E-02**	**8E-03**	3.31E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	5.16E-02	4.39E-02	1.00E+00	**5E-02**	**4E-02**	5.86E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	7.59E-02	6.45E-02	NA	---	---	8.62E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	6.50E-01	N	3.95E-01	3.35E-01	5.00E+00	**8E-02**	**7E-02**	4.48E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	2.61E-01	2.22E-01	1.00E+02	**3E-03**	**2E-03**	2.96E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	9.00E-01	Y	5.47E-01	4.64E-01	9.77E+01	**6E-03**	**5E-03**	6.21E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.40E-01	Y	8.50E-02	7.22E-02	1.00E+03	**9E-05**	**7E-05**	9.65E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	3.95E-01	3.35E-01	NA	---	---	4.48E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	2.70E+01	Y	1.64E+01	1.39E+01	2.00E+02	**8E-02**	**7E-02**	1.86E+00	-		**---**
M,P-XYLENE	108-38-3	4.00E-01	Y	2.43E-01	2.06E-01	1.00E+02	**2E-03**	**2E-03**	2.76E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	3.20E-01	N	1.94E-01	1.65E-01	6.00E+02	**3E-04**	**3E-04**	M	1.00E-08	M	**6E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.40E-01	Y	8.50E-02	7.22E-02	1.00E+02	**9E-04**	**7E-04**	9.65E-03	-		**---**
TETRACHLOROETHENE	127-18-4	4.60E+00	Y	2.79E+00	2.37E+00	4.00E+01	**7E-02**	**6E-02**	3.17E-01	2.60E-07		**8E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.52E-01	1.29E-01	2.00E+00	**8E-02**	**6E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	8.00E-03	N	4.86E-03	4.13E-03	8.00E+01	**6E-05**	**5E-05**	M	4.40E-06	M	**7E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0041H**	**Total Inhalation**	**6E-01**	**5E-01**	**6E-06**
		Based on NDs only	**4E-01**	**3E-01**	**3E-06**
		Based on Detects only	**2E-01**	**2E-01**	**3E-06**
		Site-related only	**1E-01**	**1E-01**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0041H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.20E-01	1.85E-02	1.11E-02	2.48E-02	8.26E-03	1.0E-08		2E-10	1E-10	2E-10	8E-11	**6E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.45E-02	8.68E-03	1.93E-02	6.45E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	6E-09	**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	4.34E-03		1.29E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	8.00E-03	4.63E-04	2.78E-04	6.19E-04	2.06E-04	4.4E-06		2E-09	1E-09	3E-09	9E-10	**7E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0047H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	9.00E+00	Y	5.47E+00	4.64E+00	4.00E+01	**1E-01**	**1E-01**	6.21E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.52E-01	1.29E-01	2.00E+00	**8E-02**	**6E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0047H**	**Total Inhalation**	**2E-01**	**2E-01**	**3E-07**
		Based on NDs only	**8E-02**	**6E-02**	**1E-07**
		Based on Detects only	**1E-01**	**1E-01**	**2E-07**
		Site-related only	**2E-01**	**2E-01**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0047H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.45E-02	8.68E-03	1.93E-02	6.45E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	6E-09	**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	4.34E-03		1.29E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0050H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.13E-01	1.81E-01	4.00E+01	**5E-03**	**5E-03**	2.41E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.52E-01	1.29E-01	2.00E+00	**8E-02**	**6E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0050H**	**Total Inhalation**	**8E-02**	**7E-02**	**1E-07**
		Based on NDs only	**8E-02**	**7E-02**	**1E-07**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-02**	**7E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0050H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.45E-02	8.68E-03	1.93E-02	6.45E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	6E-09	**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	4.34E-03		1.29E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0051H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	3.12E-01	2.66E-01	NA	---	---	3.55E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.01E-01	8.56E-02	2.00E+00	**5E-02**	**4E-02**	1.14E-02	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	2.20E-01	Y	1.34E-01	1.14E-01	3.00E+01	**4E-03**	**4E-03**	1.52E-02	5.00E-06		**8E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.20E+00	N	7.29E-01	6.19E-01	2.00E+00	**4E-01**	**3E-01**	8.27E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	7.80E-01	Y	4.74E-01	4.02E-01	6.00E+01	**8E-03**	**7E-03**	5.38E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	8.50E-02	7.22E-02	7.00E+00	**1E-02**	**1E-02**	9.65E-03	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	2.25E-01	1.91E-01	6.00E+01	**4E-03**	**3E-03**	2.55E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	2.10E-01	Y	1.28E-01	1.08E-01	8.00E+02	**2E-04**	**1E-04**	1.45E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	6.30E-01	Y	3.83E-01	3.25E-01	3.00E+01	**1E-02**	**1E-02**	4.34E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	2.35E-01	N	1.43E-01	1.21E-01	1.00E+00	**1E-01**	**1E-01**	1.62E-02	4.90E-05		**8E-07**
BROMODICHLOROMETHANE	75-27-4	3.60E-01	Y	2.19E-01	1.86E-01	NA	---	---	2.48E-02	3.70E-05		**9E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	4.86E-01	4.13E-01	5.00E+00	**1E-01**	**8E-02**	5.52E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	2.91E-01	2.48E-01	1.00E+02	**3E-03**	**2E-03**	3.31E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	2.10E+00	Y	1.28E+00	1.08E+00	9.77E+01	**1E-02**	**1E-02**	1.45E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	7.60E+00	Y	4.62E+00	3.92E+00	7.00E+01	**7E-02**	**6E-02**	5.24E-01	-		**---**
ETHYLBENZENE	100-41-4	9.50E-01	Y	5.77E-01	4.90E-01	1.00E+03	**6E-04**	**5E-04**	6.55E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	9.50E-01	N	5.77E-01	4.90E-01	NA	---	---	6.55E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	5.20E+02	Y	3.16E+02	2.68E+02	2.00E+02	**2E+00**	**1E+00**	3.59E+01	-		**---**
M,P-XYLENE	108-38-3	3.00E+00	Y	1.82E+00	1.55E+00	1.00E+02	**2E-02**	**2E-02**	2.07E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	9.40E-01	Y	5.71E-01	4.85E-01	6.00E+02	**1E-03**	**8E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	8.30E-02	Y	5.04E-02	4.28E-02	3.00E+00	**2E-02**	**1E-02**	5.72E-03	3.40E-05		**2E-07**
O-XYLENE	95-47-6	9.10E-01	Y	5.53E-01	4.70E-01	1.00E+02	**6E-03**	**5E-03**	6.27E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.02E+02	Y	2.44E+02	2.08E+02	4.00E+01	**6E+00**	**5E+00**	2.77E+01	2.60E-07		**7E-06**
TRICHLOROETHENE	79-01-6	6.00E-02	Y	3.64E-02	3.10E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	1.83E+00	Y	1.11E+00	9.44E-01	2.00E+02	**6E-03**	**5E-03**	1.26E-01	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	3.95E-02	3.35E-02	8.00E+01	**5E-04**	**4E-04**	M	4.40E-06	M	**6E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0051H**	**Total Inhalation**	**1E+01**	**8E+00**	**4E-05**
		Based on NDs only	**2E+00**	**2E+00**	**3E-05**
		Based on Detects only	**8E+00**	**7E+00**	**1E-05**
		Site-related only	**6E+00**	**5E+00**	**7E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0051H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.40E-01	5.44E-02	3.26E-02	7.28E-02	2.43E-02	1.0E-08		5E-10	3E-10	7E-10	2E-10	**2E-09**
TRICHLOROETHENE	79-01-6	6.00E-02	3.47E-03	2.08E-03	4.64E-03	1.55E-03	1.0E-06	kidney	3E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	6.00E-02	1.04E-03		3.10E-03		3.1E-06	NHL+liver	3E-09		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	3.76E-03	2.26E-03	5.03E-03	1.68E-03	4.4E-06		2E-08	1E-08	2E-08	7E-09	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0052H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.90E+00	Y	1.15E+00	9.80E-01	4.00E+01	**3E-02**	**2E-02**	1.31E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.52E-01	1.29E-01	2.00E+00	**8E-02**	**6E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0052H**	**Total Inhalation**	**1E-01**	**9E-02**	**1E-07**
		Based on NDs only	**8E-02**	**6E-02**	**1E-07**
		Based on Detects only	**3E-02**	**2E-02**	**3E-08**
		Site-related only	**1E-01**	**9E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0052H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.45E-02	8.68E-03	1.93E-02	6.45E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	6E-09	**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	4.34E-03		1.29E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0053H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	3.12E-01	2.66E-01	NA	---	---	3.55E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.90E-01	Y	1.15E-01	9.80E-02	2.00E+00	**6E-02**	**5E-02**	1.31E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	2.10E-01	N	1.28E-01	1.08E-01	3.00E+01	**4E-03**	**4E-03**	1.45E-02	5.00E-06		**7E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.45E+00	N	8.81E-01	7.48E-01	2.00E+00	**4E-01**	**4E-01**	1.00E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.10E-01	Y	3.70E-01	3.15E-01	6.00E+01	**6E-03**	**5E-03**	4.21E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	7.60E-02	Y	4.62E-02	3.92E-02	7.00E+00	**7E-03**	**6E-03**	5.24E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	2.25E-01	1.91E-01	6.00E+01	**4E-03**	**3E-03**	2.55E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	2.74E-01	2.33E-01	8.00E+02	**3E-04**	**3E-04**	3.11E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	9.60E-01	Y	5.83E-01	4.95E-01	3.00E+01	**2E-02**	**2E-02**	6.62E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	6.68E-02	5.68E-02	1.00E+00	**7E-02**	**6E-02**	7.58E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	3.05E-01	2.59E-01	NA	---	---	3.46E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	3.70E-01	N	2.25E-01	1.91E-01	5.00E+00	**4E-02**	**4E-02**	2.55E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	2.79E-01	2.37E-01	1.00E+02	**3E-03**	**2E-03**	3.17E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	8.78E-01	Y	5.33E-01	4.53E-01	9.77E+01	**5E-03**	**5E-03**	6.06E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	3.13E+00	Y	1.90E+00	1.62E+00	7.00E+01	**3E-02**	**2E-02**	2.16E-01	-		**---**
ETHYLBENZENE	100-41-4	3.30E+00	Y	2.00E+00	1.70E+00	1.00E+03	**2E-03**	**2E-03**	2.28E-01	2.50E-06		**6E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.95E+00	N	1.18E+00	1.01E+00	NA	---	---	1.34E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	5.40E+00	Y	3.28E+00	2.79E+00	2.00E+02	**2E-02**	**1E-02**	3.72E-01	-		**---**
M,P-XYLENE	108-38-3	2.30E+00	Y	1.40E+00	1.19E+00	1.00E+02	**1E-02**	**1E-02**	1.59E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	8.33E-01	Y	5.06E-01	4.30E-01	6.00E+02	**8E-04**	**7E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	3.60E-02	Y	2.19E-02	1.86E-02	3.00E+00	**7E-03**	**6E-03**	2.48E-03	3.40E-05		**8E-08**
O-XYLENE	95-47-6	8.25E-01	Y	5.01E-01	4.25E-01	1.00E+02	**5E-03**	**4E-03**	5.69E-02	-		**---**
TETRACHLOROETHENE	127-18-4	2.41E+01	Y	1.46E+01	1.24E+01	4.00E+01	**4E-01**	**3E-01**	1.66E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	4.70E-01	Y	2.85E-01	2.43E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	1.61E-01	1.37E-01	2.00E+02	**8E-04**	**7E-04**	1.83E-02	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	3.95E-02	3.35E-02	8.00E+01	**5E-04**	**4E-04**	M	4.40E-06	M	**6E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0053H**	**Total Inhalation**	**3E+00**	**2E+00**	**4E-05**
		Based on NDs only	**2E+00**	**2E+00**	**3E-05**
		Based on Detects only	**7E-01**	**6E-01**	**4E-06**
		Site-related only	**5E-01**	**4E-01**	**8E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0053H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.33E-01	4.82E-02	2.89E-02	6.45E-02	2.15E-02	1.0E-08		5E-10	3E-10	6E-10	2E-10	**2E-09**
TRICHLOROETHENE	79-01-6	4.70E-01	2.72E-02	1.63E-02	3.64E-02	1.21E-02	1.0E-06	kidney	3E-08	2E-08	4E-08	1E-08	**9E-08**
TRICHLOROETHENE	79-01-6	4.70E-01	8.15E-03		2.43E-02		3.1E-06	NHL+liver	3E-08		8E-08		**1E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	3.76E-03	2.26E-03	5.03E-03	1.68E-03	4.4E-06		2E-08	1E-08	2E-08	7E-09	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0054H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	2.14E+01	Y	1.30E+01	1.10E+01	4.00E+01	**3E-01**	**3E-01**	1.48E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	9.30E+00	Y	5.65E+00	4.80E+00	2.00E+00	**3E+00**	**2E+00**	M	4.10E-06	M	**4E-06**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0054H**	**Total Inhalation**	**3E+00**	**3E+00**	**4E-06**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**3E+00**	**3E+00**	**4E-06**
		Site-related only	**3E+00**	**3E+00**	**4E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0054H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	9.30E+00	5.38E-01	3.23E-01	7.20E-01	2.40E-01	1.0E-06	kidney	5E-07	3E-07	7E-07	2E-07	**2E-06**
TRICHLOROETHENE	79-01-6	9.30E+00	1.61E-01		4.80E-01		3.1E-06	NHL+liver	5E-07		1E-06		**2E-06**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0055H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.50E+00	Y	9.11E-01	7.74E-01	4.00E+01	**2E-02**	**2E-02**	1.03E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.52E-01	1.29E-01	2.00E+00	**8E-02**	**6E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0055H**	**Total Inhalation**	**1E-01**	**8E-02**	**1E-07**
		Based on NDs only	**8E-02**	**6E-02**	**1E-07**
		Based on Detects only	**2E-02**	**2E-02**	**3E-08**
		Site-related only	**1E-01**	**8E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0055H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.45E-02	8.68E-03	1.93E-02	6.45E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	6E-09	**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	4.34E-03		1.29E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0056H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	6.90E+00	Y	4.19E+00	3.56E+00	4.00E+01	**1E-01**	**9E-02**	4.76E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.52E-01	1.29E-01	2.00E+00	**8E-02**	**6E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0056H**	**Total Inhalation**	**2E-01**	**2E-01**	**2E-07**
		Based on NDs only	**8E-02**	**6E-02**	**1E-07**
		Based on Detects only	**1E-01**	**9E-02**	**1E-07**
		Site-related only	**2E-01**	**2E-01**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0056H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.45E-02	8.68E-03	1.93E-02	6.45E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	6E-09	**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	4.34E-03		1.29E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0057H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.13E-01	1.81E-01	4.00E+01	**5E-03**	**5E-03**	2.41E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.52E-01	1.29E-01	2.00E+00	**8E-02**	**6E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0057H**	**Total Inhalation**	**8E-02**	**7E-02**	**1E-07**
		Based on NDs only	**8E-02**	**7E-02**	**1E-07**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-02**	**7E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0057H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.45E-02	8.68E-03	1.93E-02	6.45E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	6E-09	**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	4.34E-03		1.29E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0058H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.13E-01	1.81E-01	4.00E+01	**5E-03**	**5E-03**	2.41E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.52E-01	1.29E-01	2.00E+00	**8E-02**	**6E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0058H**	**Total Inhalation**	**8E-02**	**7E-02**	**1E-07**
		Based on NDs only	**8E-02**	**7E-02**	**1E-07**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-02**	**7E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0058H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.45E-02	8.68E-03	1.93E-02	6.45E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	6E-09	**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	4.34E-03		1.29E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0059H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	7.00E-02	N	4.25E-02	3.61E-02	NA	---	---	4.83E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	3.60E-01	Y	2.19E-01	1.86E-01	2.00E+00	**1E-01**	**9E-02**	2.48E-02	3.00E-05		**7E-07**
1,4-DIOXANE	123-91-1	4.70E+00	Y	2.85E+00	2.43E+00	3.00E+01	**1E-01**	**8E-02**	3.24E-01	5.00E-06		**2E-06**
1,1,2-TRICHLOROETHANE	79-00-5	4.95E-02	N	3.01E-02	2.55E-02	2.00E-01	**2E-01**	**1E-01**	3.41E-03	1.60E-05		**5E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.00E+00	Y	2.43E+00	2.06E+00	2.00E+00	**1E+00**	**1E+00**	2.76E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.10E-01	Y	3.70E-01	3.15E-01	6.00E+01	**6E-03**	**5E-03**	4.21E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.60E-02	N	2.19E-02	1.86E-02	9.00E+00	**2E-03**	**2E-03**	2.48E-03	6.00E-04		**1E-06**
1,2-DICHLOROETHANE	107-06-2	8.60E-02	Y	5.22E-02	4.44E-02	7.00E+00	**7E-03**	**6E-03**	5.93E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.60E+00	Y	9.72E-01	8.26E-01	4.00E+00	**2E-01**	**2E-01**	1.10E-01	3.70E-06		**4E-07**
1,3,5-Trimethylbenzene	108-67-8	1.45E-01	N	8.81E-02	7.48E-02	6.00E+01	**1E-03**	**1E-03**	1.00E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.80E-01	Y	1.09E-01	9.29E-02	8.00E+02	**1E-04**	**1E-04**	1.24E-02	1.10E-05		**1E-07**
BENZENE	71-43-2	1.90E+00	Y	1.15E+00	9.80E-01	3.00E+01	**4E-02**	**3E-02**	1.31E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	1.50E-01	N	9.11E-02	7.74E-02	1.00E+00	**9E-02**	**8E-02**	1.03E-02	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	2.30E-01	Y	1.40E-01	1.19E-01	NA	---	---	1.59E-02	3.70E-05		**6E-07**
BROMOMETHANE	74-83-9	5.00E-01	N	3.04E-01	2.58E-01	5.00E+00	**6E-02**	**5E-02**	3.45E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	1.50E+00	Y	9.11E-01	7.74E-01	1.00E+02	**9E-03**	**8E-03**	1.03E-01	6.00E-06		**6E-07**
CHLOROFORM	67-66-3	1.70E+00	Y	1.03E+00	8.77E-01	9.77E+01	**1E-02**	**9E-03**	1.17E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	3.10E+00	Y	1.88E+00	1.60E+00	7.00E+01	**3E-02**	**2E-02**	2.14E-01	-		**---**
ETHYLBENZENE	100-41-4	7.40E-01	Y	4.49E-01	3.82E-01	1.00E+03	**4E-04**	**4E-04**	5.10E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.40E+00	Y	2.67E+00	2.27E+00	NA	---	---	3.03E-01	2.20E-05		**7E-06**
ISOPROPYL ALCOHOL	67-63-0	8.00E+01	Y	4.86E+01	4.13E+01	2.00E+02	**2E-01**	**2E-01**	5.52E+00	-		**---**
M,P-XYLENE	108-38-3	3.00E+00	Y	1.82E+00	1.55E+00	1.00E+02	**2E-02**	**2E-02**	2.07E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	9.10E-01	Y	5.53E-01	4.70E-01	6.00E+02	**9E-04**	**8E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	1.00E-01	Y	6.07E-02	5.16E-02	3.00E+00	**2E-02**	**2E-02**	6.89E-03	3.40E-05		**2E-07**
O-XYLENE	95-47-6	1.30E+00	Y	7.89E-01	6.71E-01	1.00E+02	**8E-03**	**7E-03**	8.96E-02	-		**---**
TETRACHLOROETHENE	127-18-4	2.20E+02	Y	1.34E+02	1.14E+02	4.00E+01	**3E+00**	**3E+00**	1.52E+01	2.60E-07		**4E-06**
TRICHLOROETHENE	79-01-6	1.24E+01	Y	7.50E+00	6.37E+00	2.00E+00	**4E+00**	**3E+00**	M	4.10E-06	M	**5E-06**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	2.90E-02	N	1.76E-02	1.50E-02	8.00E+01	**2E-04**	**2E-04**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0059H**	**Total Inhalation**	**9E+00**	**8E+00**	**3E-05**
		Based on NDs only	**3E-01**	**3E-01**	**2E-06**
		Based on Detects only	**9E+00**	**8E+00**	**2E-05**
		Site-related only	**7E+00**	**6E+00**	**1E-05**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0059H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.10E-01	5.26E-02	3.16E-02	7.04E-02	2.35E-02	1.0E-08		5E-10	3E-10	7E-10	2E-10	**2E-09**
TRICHLOROETHENE	79-01-6	1.24E+01	7.14E-01	4.29E-01	9.56E-01	3.19E-01	1.0E-06	kidney	7E-07	4E-07	1E-06	3E-07	**2E-06**
TRICHLOROETHENE	79-01-6	1.24E+01	2.14E-01		6.37E-01		3.1E-06	NHL+liver	7E-07		2E-06		**3E-06**
VINYL CHLORIDE	75-01-4	2.90E-02	1.68E-03	1.01E-03	2.24E-03	7.48E-04	4.4E-06		7E-09	4E-09	1E-08	3E-09	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0060H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.13E-01	1.81E-01	4.00E+01	**5E-03**	**5E-03**	2.41E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.52E-01	1.29E-01	2.00E+00	**8E-02**	**6E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0060H**	**Total Inhalation**	**8E-02**	**7E-02**	**1E-07**
		Based on NDs only	**8E-02**	**7E-02**	**1E-07**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-02**	**7E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0060H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.45E-02	8.68E-03	1.93E-02	6.45E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	6E-09	**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	4.34E-03		1.29E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0061H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.13E-01	1.81E-01	4.00E+01	**5E-03**	**5E-03**	2.41E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.52E-01	1.29E-01	2.00E+00	**8E-02**	**6E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0061H**	**Total Inhalation**	**8E-02**	**7E-02**	**1E-07**
		Based on NDs only	**8E-02**	**7E-02**	**1E-07**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-02**	**7E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0061H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.45E-02	8.68E-03	1.93E-02	6.45E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	6E-09	**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	4.34E-03		1.29E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0062H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	6.38E-03	5.42E-03	NA	---	---	7.24E-04	5.80E-05		**4E-08**
1,3-BUTADIENE	106-99-0	4.95E-02	N	3.01E-02	2.55E-02	2.00E+00	**2E-02**	**1E-02**	3.41E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	7.00E-02	N	4.25E-02	3.61E-02	3.00E+01	**1E-03**	**1E-03**	4.83E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	4.25E-03	3.61E-03	2.00E-01	**2E-02**	**2E-02**	4.83E-04	1.60E-05		**8E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.85E-01	N	2.95E-01	2.50E-01	2.00E+00	**1E-01**	**1E-01**	3.34E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	2.40E-01	Y	1.46E-01	1.24E-01	6.00E+01	**2E-03**	**2E-03**	1.65E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	2.00E-02	1.70E-02	9.00E+00	**2E-03**	**2E-03**	2.28E-03	6.00E-04		**1E-06**
1,2-DICHLOROETHANE	107-06-2	1.70E-01	Y	1.03E-01	8.77E-02	7.00E+00	**1E-02**	**1E-02**	1.17E-02	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	5.47E-02	4.64E-02	4.00E+00	**1E-02**	**1E-02**	6.21E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	3.64E-02	3.10E-02	6.00E+01	**6E-04**	**5E-04**	4.14E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	3.04E-02	2.58E-02	8.00E+02	**4E-05**	**3E-05**	3.45E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	1.00E+00	Y	6.07E-01	5.16E-01	3.00E+01	**2E-02**	**2E-02**	6.89E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	5.16E-02	4.39E-02	1.00E+00	**5E-02**	**4E-02**	5.86E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	7.59E-02	6.45E-02	NA	---	---	8.62E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	6.50E-01	N	3.95E-01	3.35E-01	5.00E+00	**8E-02**	**7E-02**	4.48E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	2.43E-01	2.06E-01	1.00E+02	**2E-03**	**2E-03**	2.76E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.40E-01	Y	2.06E-01	1.75E-01	9.77E+01	**2E-03**	**2E-03**	2.34E-02	2.30E-05		**5E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	3.00E-01	Y	1.82E-01	1.55E-01	1.00E+03	**2E-04**	**2E-04**	2.07E-02	2.50E-06		**5E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	3.95E-01	3.35E-01	NA	---	---	4.48E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.80E+01	Y	1.09E+01	9.29E+00	2.00E+02	**5E-02**	**5E-02**	1.24E+00	-		**---**
M,P-XYLENE	108-38-3	1.10E+00	Y	6.68E-01	5.68E-01	1.00E+02	**7E-03**	**6E-03**	7.58E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	2.65E-01	N	1.61E-01	1.37E-01	6.00E+02	**3E-04**	**2E-04**	M	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	3.60E-01	Y	2.19E-01	1.86E-01	1.00E+02	**2E-03**	**2E-03**	2.48E-02	-		**---**
TETRACHLOROETHENE	127-18-4	5.00E-02	Y	3.04E-02	2.58E-02	4.00E+01	**8E-04**	**6E-04**	3.45E-03	2.60E-07		**9E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.52E-01	1.29E-01	2.00E+00	**8E-02**	**6E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	8.00E-03	N	4.86E-03	4.13E-03	8.00E+01	**6E-05**	**5E-05**	M	4.40E-06	M	**7E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0062H**	**Total Inhalation**	**5E-01**	**4E-01**	**5E-06**
		Based on NDs only	**4E-01**	**3E-01**	**3E-06**
		Based on Detects only	**1E-01**	**9E-02**	**2E-06**
		Site-related only	**8E-02**	**7E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0062H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.65E-01	1.53E-02	9.20E-03	2.05E-02	6.84E-03	1.0E-08		2E-10	9E-11	2E-10	7E-11	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.45E-02	8.68E-03	1.93E-02	6.45E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	6E-09	**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	4.34E-03		1.29E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	8.00E-03	4.63E-04	2.78E-04	6.19E-04	2.06E-04	4.4E-06		2E-09	1E-09	3E-09	9E-10	**7E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0063H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	4.00E+00	Y	2.43E+00	2.06E+00	4.00E+01	**6E-02**	**5E-02**	2.76E-01	2.60E-07		**7E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.52E-01	1.29E-01	2.00E+00	**8E-02**	**6E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0063H**	**Total Inhalation**	**1E-01**	**1E-01**	**2E-07**
		Based on NDs only	**8E-02**	**6E-02**	**1E-07**
		Based on Detects only	**6E-02**	**5E-02**	**7E-08**
		Site-related only	**1E-01**	**1E-01**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0063H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.45E-02	8.68E-03	1.93E-02	6.45E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	6E-09	**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	4.34E-03		1.29E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0064H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	3.12E-01	2.66E-01	NA	---	---	3.55E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.01E-01	8.56E-02	2.00E+00	**5E-02**	**4E-02**	1.14E-02	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	5.10E-01	Y	3.10E-01	2.63E-01	3.00E+01	**1E-02**	**9E-03**	3.52E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	2.49E-01	2.12E-01	2.00E-01	**1E+00**	**1E+00**	2.83E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	9.46E-01	8.04E-01	2.00E+00	**5E-01**	**4E-01**	1.07E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E-01	Y	7.29E-02	6.19E-02	6.00E+01	**1E-03**	**1E-03**	8.27E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	3.64E-01	3.10E-01	9.00E+00	**4E-02**	**3E-02**	4.14E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	7.50E-02	Y	4.55E-02	3.87E-02	7.00E+00	**7E-03**	**6E-03**	5.17E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	2.22E-01	1.88E-01	4.00E+00	**6E-02**	**5E-02**	2.52E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	4.55E-01	3.87E-01	6.00E+01	**8E-03**	**6E-03**	5.17E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	5.47E-01	4.65E-01	8.00E+02	**7E-04**	**6E-04**	6.21E-02	1.10E-05		**7E-07**
BENZENE	71-43-2	6.07E-01	Y	3.68E-01	3.13E-01	3.00E+01	**1E-02**	**1E-02**	4.18E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	5.81E-01	4.94E-01	1.00E+00	**6E-01**	**5E-01**	6.60E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	3.05E-01	2.59E-01	NA	---	---	3.46E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	5.50E-01	N	3.34E-01	2.84E-01	5.00E+00	**7E-02**	**6E-02**	3.79E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	2.43E-01	2.06E-01	1.00E+02	**2E-03**	**2E-03**	2.76E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	7.60E-01	Y	4.62E-01	3.92E-01	9.77E+01	**5E-03**	**4E-03**	5.24E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	2.90E+00	Y	1.76E+00	1.50E+00	7.00E+01	**3E-02**	**2E-02**	2.00E-01	-		**---**
ETHYLBENZENE	100-41-4	1.70E+00	Y	1.03E+00	8.77E-01	1.00E+03	**1E-03**	**9E-04**	1.17E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	9.72E-01	8.26E-01	NA	---	---	1.10E-01	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	1.00E+01	Y	6.07E+00	5.16E+00	2.00E+02	**3E-02**	**3E-02**	6.89E-01	-		**---**
M,P-XYLENE	108-38-3	5.65E+00	Y	3.43E+00	2.92E+00	1.00E+02	**3E-02**	**3E-02**	3.90E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	1.10E+00	Y	6.68E-01	5.68E-01	6.00E+02	**1E-03**	**9E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.52E+00	Y	9.22E-01	7.84E-01	1.00E+02	**9E-03**	**8E-03**	1.05E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.30E+01	Y	7.89E+00	6.71E+00	4.00E+01	**2E-01**	**2E-01**	8.96E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	1.50E-01	Y	9.11E-02	7.74E-02	2.00E+00	**5E-02**	**4E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	2.14E-01	1.82E-01	2.00E+02	**1E-03**	**9E-04**	2.43E-02	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	3.95E-02	3.35E-02	8.00E+01	**5E-04**	**4E-04**	M	4.40E-06	M	**6E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0064H**	**Total Inhalation**	**3E+00**	**2E+00**	**4E-05**
		Based on NDs only	**3E+00**	**2E+00**	**4E-05**
		Based on Detects only	**4E-01**	**3E-01**	**3E-06**
		Site-related only	**3E-01**	**2E-01**	**5E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0064H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.10E+00	6.36E-02	3.82E-02	8.51E-02	2.84E-02	1.0E-08		6E-10	4E-10	9E-10	3E-10	**2E-09**
TRICHLOROETHENE	79-01-6	1.50E-01	8.68E-03	5.21E-03	1.16E-02	3.87E-03	1.0E-06	kidney	9E-09	5E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	1.50E-01	2.60E-03		7.74E-03		3.1E-06	NHL+liver	8E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	3.76E-03	2.26E-03	5.03E-03	1.68E-03	4.4E-06		2E-08	1E-08	2E-08	7E-09	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0065H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.50E-02	N	3.34E-02	2.84E-02	NA	---	---	3.79E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	6.00E-02	N	3.64E-02	3.10E-02	2.00E+00	**2E-02**	**2E-02**	4.14E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	2.35E-01	N	1.43E-01	1.21E-01	3.00E+01	**5E-03**	**4E-03**	1.62E-02	5.00E-06		**8E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.05E-02	N	2.46E-02	2.09E-02	2.00E-01	**1E-01**	**1E-01**	2.79E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.65E+00	N	1.00E+00	8.51E-01	2.00E+00	**5E-01**	**4E-01**	1.14E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.50E-01	Y	2.73E-01	2.32E-01	6.00E+01	**5E-03**	**4E-03**	3.10E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	2.95E-02	N	1.79E-02	1.52E-02	9.00E+00	**2E-03**	**2E-03**	2.03E-03	6.00E-04		**1E-06**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	4.68E-02	3.97E-02	7.00E+00	**7E-03**	**6E-03**	5.31E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	1.35E-01	N	8.20E-02	6.97E-02	4.00E+00	**2E-02**	**2E-02**	9.31E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	1.20E-01	N	7.29E-02	6.19E-02	6.00E+01	**1E-03**	**1E-03**	8.27E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	N	5.16E-02	4.39E-02	8.00E+02	**6E-05**	**5E-05**	5.86E-03	1.10E-05		**6E-08**
BENZENE	71-43-2	8.60E-01	Y	5.22E-01	4.44E-01	3.00E+01	**2E-02**	**1E-02**	5.93E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	1.25E-01	N	7.59E-02	6.45E-02	1.00E+00	**8E-02**	**6E-02**	8.62E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	2.95E-01	N	1.79E-01	1.52E-01	NA	---	---	2.03E-02	3.70E-05		**8E-07**
BROMOMETHANE	74-83-9	4.15E-01	N	2.52E-01	2.14E-01	5.00E+00	**5E-02**	**4E-02**	2.86E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.40E-01	Y	3.28E-01	2.79E-01	1.00E+02	**3E-03**	**3E-03**	3.72E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	6.70E-01	Y	4.07E-01	3.46E-01	9.77E+01	**4E-03**	**4E-03**	4.62E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	2.00E+00	Y	1.21E+00	1.03E+00	7.00E+01	**2E-02**	**1E-02**	1.38E-01	-		**---**
ETHYLBENZENE	100-41-4	3.60E-01	Y	2.19E-01	1.86E-01	1.00E+03	**2E-04**	**2E-04**	2.48E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	2.20E+00	N	1.34E+00	1.14E+00	NA	---	---	1.52E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	1.00E+01	Y	6.07E+00	5.16E+00	2.00E+02	**3E-02**	**3E-02**	6.89E-01	-		**---**
M,P-XYLENE	108-38-3	1.40E+00	Y	8.50E-01	7.22E-01	1.00E+02	**9E-03**	**7E-03**	9.65E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	6.20E-01	Y	3.77E-01	3.20E-01	6.00E+02	**6E-04**	**5E-04**	M	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	4.50E-02	Y	2.73E-02	2.32E-02	3.00E+00	**9E-03**	**8E-03**	3.10E-03	3.40E-05		**1E-07**
O-XYLENE	95-47-6	4.60E-01	Y	2.79E-01	2.37E-01	1.00E+02	**3E-03**	**2E-03**	3.17E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.60E-01	Y	9.72E-02	8.26E-02	4.00E+01	**2E-03**	**2E-03**	1.10E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	N	5.47E-02	4.64E-02	2.00E+00	**3E-02**	**2E-02**	M	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	2.40E-02	N	1.46E-02	1.24E-02	8.00E+01	**2E-04**	**2E-04**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0065H**	**Total Inhalation**	**9E-01**	**8E-01**	**8E-06**
		Based on NDs only	**8E-01**	**7E-01**	**6E-06**
		Based on Detects only	**1E-01**	**9E-02**	**2E-06**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0065H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.20E-01	3.59E-02	2.15E-02	4.80E-02	1.60E-02	1.0E-08		4E-10	2E-10	5E-10	2E-10	**1E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	5.21E-03	3.12E-03	6.97E-03	2.32E-03	1.0E-06	kidney	5E-09	3E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	9.00E-02	1.56E-03		4.64E-03		3.1E-06	NHL+liver	5E-09		1E-08		**2E-08**
VINYL CHLORIDE	75-01-4	2.40E-02	1.39E-03	8.33E-04	1.86E-03	6.19E-04	4.4E-06		6E-09	4E-09	8E-09	3E-09	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0066H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.25E-02	N	1.37E-02	1.16E-02	NA	---	---	1.55E-03	5.80E-05		**9E-08**
1,3-BUTADIENE	106-99-0	1.00E-01	N	6.07E-02	5.16E-02	2.00E+00	**3E-02**	**3E-02**	6.89E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	4.30E-01	Y	2.61E-01	2.22E-01	3.00E+01	**9E-03**	**7E-03**	2.96E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.10E-02	N	1.28E-02	1.08E-02	2.00E-01	**6E-02**	**5E-02**	1.45E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	4.25E-01	3.61E-01	2.00E+00	**2E-01**	**2E-01**	4.83E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.30E-01	Y	2.61E-01	2.22E-01	6.00E+01	**4E-03**	**4E-03**	2.96E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	4.55E-02	3.87E-02	9.00E+00	**5E-03**	**4E-03**	5.17E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	3.50E-01	Y	2.13E-01	1.81E-01	7.00E+00	**3E-02**	**3E-02**	2.41E-02	2.60E-05		**6E-07**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	6.38E-02	5.42E-02	4.00E+00	**2E-02**	**1E-02**	7.24E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	7.89E-02	6.71E-02	6.00E+01	**1E-03**	**1E-03**	8.96E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	N	5.16E-02	4.39E-02	8.00E+02	**6E-05**	**5E-05**	5.86E-03	1.10E-05		**6E-08**
BENZENE	71-43-2	9.90E-01	Y	6.01E-01	5.11E-01	3.00E+01	**2E-02**	**2E-02**	6.83E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	2.50E-01	N	1.52E-01	1.29E-01	1.00E+00	**2E-01**	**1E-01**	1.72E-02	4.90E-05		**8E-07**
BROMODICHLOROMETHANE	75-27-4	2.55E-01	N	1.55E-01	1.32E-01	NA	---	---	1.76E-02	3.70E-05		**7E-07**
BROMOMETHANE	74-83-9	8.50E-01	N	5.16E-01	4.39E-01	5.00E+00	**1E-01**	**9E-02**	5.86E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	2.79E-01	2.37E-01	1.00E+02	**3E-03**	**2E-03**	3.17E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	6.30E-01	Y	3.83E-01	3.25E-01	9.77E+01	**4E-03**	**3E-03**	4.34E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	6.70E+00	Y	4.07E+00	3.46E+00	7.00E+01	**6E-02**	**5E-02**	4.62E-01	-		**---**
ETHYLBENZENE	100-41-4	5.10E-01	Y	3.10E-01	2.63E-01	1.00E+03	**3E-04**	**3E-04**	3.52E-02	2.50E-06		**9E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	4.86E-01	4.13E-01	NA	---	---	5.52E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.10E+01	Y	6.68E+00	5.68E+00	2.00E+02	**3E-02**	**3E-02**	7.58E-01	-		**---**
M,P-XYLENE	108-38-3	1.50E+00	Y	9.11E-01	7.74E-01	1.00E+02	**9E-03**	**8E-03**	1.03E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.35E-01	N	2.03E-01	1.73E-01	6.00E+02	**3E-04**	**3E-04**	M	1.00E-08	M	**7E-10**
NAPHTHALENE	91-20-3	2.55E-02	N	1.55E-02	1.32E-02	3.00E+00	**5E-03**	**4E-03**	1.76E-03	3.40E-05		**6E-08**
O-XYLENE	95-47-6	3.70E-01	Y	2.25E-01	1.91E-01	1.00E+02	**2E-03**	**2E-03**	2.55E-02	-		**---**
TETRACHLOROETHENE	127-18-4	9.40E-02	Y	5.71E-02	4.85E-02	4.00E+01	**1E-03**	**1E-03**	6.48E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	1.90E-01	Y	1.15E-01	9.80E-02	2.00E+00	**6E-02**	**5E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	7.00E-03	N	4.25E-03	3.61E-03	8.00E+01	**5E-05**	**5E-05**	M	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0066H**	**Total Inhalation**	**8E-01**	**7E-01**	**9E-06**
		Based on NDs only	**6E-01**	**5E-01**	**6E-06**
		Based on Detects only	**2E-01**	**2E-01**	**3E-06**
		Site-related only	**7E-02**	**6E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0066H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.35E-01	1.94E-02	1.16E-02	2.59E-02	8.64E-03	1.0E-08		2E-10	1E-10	3E-10	9E-11	**7E-10**
TRICHLOROETHENE	79-01-6	1.90E-01	1.10E-02	6.59E-03	1.47E-02	4.90E-03	1.0E-06	kidney	1E-08	7E-09	1E-08	5E-09	**4E-08**
TRICHLOROETHENE	79-01-6	1.90E-01	3.30E-03		9.80E-03		3.1E-06	NHL+liver	1E-08		3E-08		**4E-08**
VINYL CHLORIDE	75-01-4	7.00E-03	4.05E-04	2.43E-04	5.42E-04	1.81E-04	4.4E-06		2E-09	1E-09	2E-09	8E-10	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0069H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	3.00E-02	N	1.82E-02	1.55E-02	NA	---	---	2.07E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	1.35E-01	N	8.20E-02	6.97E-02	2.00E+00	**4E-02**	**3E-02**	9.31E-03	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	2.90E-01	Y	1.76E-01	1.50E-01	3.00E+01	**6E-03**	**5E-03**	2.00E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.80E-02	N	1.70E-02	1.44E-02	2.00E-01	**9E-02**	**7E-02**	1.93E-03	1.60E-05		**3E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	9.00E-01	N	5.47E-01	4.64E-01	2.00E+00	**3E-01**	**2E-01**	6.21E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	8.30E-01	Y	5.04E-01	4.28E-01	6.00E+01	**8E-03**	**7E-03**	5.72E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	1.00E-01	N	6.07E-02	5.16E-02	9.00E+00	**7E-03**	**6E-03**	6.89E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	1.40E+00	Y	8.50E-01	7.22E-01	7.00E+00	**1E-01**	**1E-01**	9.65E-02	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	1.40E-01	N	8.50E-02	7.22E-02	4.00E+00	**2E-02**	**2E-02**	9.65E-03	3.70E-06		**4E-08**
1,3,5-Trimethylbenzene	108-67-8	1.70E-01	N	1.03E-01	8.77E-02	6.00E+01	**2E-03**	**1E-03**	1.17E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	Y	5.16E-02	4.39E-02	8.00E+02	**6E-05**	**5E-05**	5.86E-03	1.10E-05		**6E-08**
BENZENE	71-43-2	8.40E-01	Y	5.10E-01	4.33E-01	3.00E+01	**2E-02**	**1E-02**	5.79E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	3.40E-01	N	2.06E-01	1.75E-01	1.00E+00	**2E-01**	**2E-01**	2.34E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	3.45E-01	N	2.10E-01	1.78E-01	NA	---	---	2.38E-02	3.70E-05		**9E-07**
BROMOMETHANE	74-83-9	1.15E+00	N	6.98E-01	5.93E-01	5.00E+00	**1E-01**	**1E-01**	7.93E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	2.67E-01	2.27E-01	1.00E+02	**3E-03**	**2E-03**	3.03E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	6.00E-01	Y	3.64E-01	3.10E-01	9.77E+01	**4E-03**	**3E-03**	4.14E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	1.10E+00	Y	6.68E-01	5.68E-01	7.00E+01	**1E-02**	**8E-03**	7.58E-02	-		**---**
ETHYLBENZENE	100-41-4	2.30E-01	Y	1.40E-01	1.19E-01	1.00E+03	**1E-04**	**1E-04**	1.59E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.10E+00	N	6.68E-01	5.68E-01	NA	---	---	7.58E-02	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	4.60E+00	Y	2.79E+00	2.37E+00	2.00E+02	**1E-02**	**1E-02**	3.17E-01	-		**---**
M,P-XYLENE	108-38-3	8.70E-01	Y	5.28E-01	4.49E-01	1.00E+02	**5E-03**	**4E-03**	6.00E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	7.90E-01	Y	4.80E-01	4.08E-01	6.00E+02	**8E-04**	**7E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	2.70E-02	N	1.64E-02	1.39E-02	3.00E+00	**5E-03**	**5E-03**	1.86E-03	3.40E-05		**6E-08**
O-XYLENE	95-47-6	3.60E-01	Y	2.19E-01	1.86E-01	1.00E+02	**2E-03**	**2E-03**	2.48E-02	-		**---**
TETRACHLOROETHENE	127-18-4	3.40E-01	Y	2.06E-01	1.75E-01	4.00E+01	**5E-03**	**4E-03**	2.34E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	1.30E-01	Y	7.89E-02	6.71E-02	2.00E+00	**4E-02**	**3E-02**	M	4.10E-06	M	**5E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	9.00E-03	N	5.47E-03	4.64E-03	8.00E+01	**7E-05**	**6E-05**	M	4.40E-06	M	**8E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0069H**	**Total Inhalation**	**1E+00**	**9E-01**	**1E-05**
		Based on NDs only	**8E-01**	**7E-01**	**8E-06**
		Based on Detects only	**2E-01**	**2E-01**	**4E-06**
		Site-related only	**5E-02**	**4E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0069H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.90E-01	4.57E-02	2.74E-02	6.11E-02	2.04E-02	1.0E-08		5E-10	3E-10	6E-10	2E-10	**2E-09**
TRICHLOROETHENE	79-01-6	1.30E-01	7.52E-03	4.51E-03	1.01E-02	3.35E-03	1.0E-06	kidney	8E-09	5E-09	1E-08	3E-09	**3E-08**
TRICHLOROETHENE	79-01-6	1.30E-01	2.26E-03		6.71E-03		3.1E-06	NHL+liver	7E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	9.00E-03	5.21E-04	3.12E-04	6.97E-04	2.32E-04	4.4E-06		2E-09	1E-09	3E-09	1E-09	**8E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0071H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	1.31E-02	1.11E-02	NA	---	---	1.48E-03	5.80E-05		**9E-08**
1,3-BUTADIENE	106-99-0	9.50E-02	N	5.77E-02	4.90E-02	2.00E+00	**3E-02**	**2E-02**	6.55E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	6.00E-02	N	3.64E-02	3.10E-02	3.00E+01	**1E-03**	**1E-03**	4.14E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	1.21E-02	1.03E-02	2.00E-01	**6E-02**	**5E-02**	1.38E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	3.95E-01	3.35E-01	2.00E+00	**2E-01**	**2E-01**	4.48E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E-01	N	8.50E-02	7.22E-02	6.00E+01	**1E-03**	**1E-03**	9.65E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	4.25E-02	3.61E-02	9.00E+00	**5E-03**	**4E-03**	4.83E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	8.00E-01	Y	4.86E-01	4.13E-01	7.00E+00	**7E-02**	**6E-02**	5.52E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	6.07E-02	5.16E-02	4.00E+00	**2E-02**	**1E-02**	6.89E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	1.20E-01	N	7.29E-02	6.19E-02	6.00E+01	**1E-03**	**1E-03**	8.27E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	4.86E-02	4.13E-02	8.00E+02	**6E-05**	**5E-05**	5.52E-03	1.10E-05		**6E-08**
BENZENE	71-43-2	6.50E-01	Y	3.95E-01	3.35E-01	3.00E+01	**1E-02**	**1E-02**	4.48E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	2.40E-01	N	1.46E-01	1.24E-01	1.00E+00	**1E-01**	**1E-01**	1.65E-02	4.90E-05		**8E-07**
BROMODICHLOROMETHANE	75-27-4	2.45E-01	N	1.49E-01	1.26E-01	NA	---	---	1.69E-02	3.70E-05		**6E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	4.86E-01	4.13E-01	5.00E+00	**1E-01**	**8E-02**	5.52E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	2.79E-01	2.37E-01	1.00E+02	**3E-03**	**2E-03**	3.17E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.60E+00	Y	9.72E-01	8.26E-01	9.77E+01	**1E-02**	**8E-03**	1.10E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	2.60E+01	Y	1.58E+01	1.34E+01	7.00E+01	**2E-01**	**2E-01**	1.79E+00	-		**---**
ETHYLBENZENE	100-41-4	3.00E-01	Y	1.82E-01	1.55E-01	1.00E+03	**2E-04**	**2E-04**	2.07E-02	2.50E-06		**5E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	4.86E-01	4.13E-01	NA	---	---	5.52E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	4.30E+00	Y	2.61E+00	2.22E+00	2.00E+02	**1E-02**	**1E-02**	2.96E-01	-		**---**
M,P-XYLENE	108-38-3	8.50E-01	Y	5.16E-01	4.39E-01	1.00E+02	**5E-03**	**4E-03**	5.86E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	3.15E-01	N	1.91E-01	1.63E-01	6.00E+02	**3E-04**	**3E-04**	M	1.00E-08	M	**6E-10**
NAPHTHALENE	91-20-3	2.75E-02	N	1.67E-02	1.42E-02	3.00E+00	**6E-03**	**5E-03**	1.90E-03	3.40E-05		**6E-08**
O-XYLENE	95-47-6	3.20E-01	Y	1.94E-01	1.65E-01	1.00E+02	**2E-03**	**2E-03**	2.21E-02	-		**---**
TETRACHLOROETHENE	127-18-4	3.30E-01	Y	2.00E-01	1.70E-01	4.00E+01	**5E-03**	**4E-03**	2.28E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	3.04E-02	2.58E-02	2.00E+00	**2E-02**	**1E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-03	N	3.95E-03	3.35E-03	8.00E+01	**5E-05**	**4E-05**	M	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0071H**	**Total Inhalation**	**9E-01**	**8E-01**	**1E-05**
		Based on NDs only	**6E-01**	**5E-01**	**6E-06**
		Based on Detects only	**3E-01**	**3E-01**	**5E-06**
		Site-related only	**2E-02**	**2E-02**	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0071H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.15E-01	1.82E-02	1.09E-02	2.44E-02	8.13E-03	1.0E-08		2E-10	1E-10	2E-10	8E-11	**6E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	2.89E-03	1.74E-03	3.87E-03	1.29E-03	1.0E-06	kidney	3E-09	2E-09	4E-09	1E-09	**1E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	8.68E-04		2.58E-03		3.1E-06	NHL+liver	3E-09		8E-09		**1E-08**
VINYL CHLORIDE	75-01-4	6.50E-03	3.76E-04	2.26E-04	5.03E-04	1.68E-04	4.4E-06		2E-09	1E-09	2E-09	7E-10	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0072H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.90E-02	N	1.76E-02	1.50E-02	NA	---	---	2.00E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	6.00E-02	N	3.64E-02	3.10E-02	2.00E+00	**2E-02**	**2E-02**	4.14E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	1.00E-01	N	6.07E-02	5.16E-02	3.00E+01	**2E-03**	**2E-03**	6.89E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.40E-02	N	8.50E-03	7.22E-03	2.00E-01	**4E-02**	**4E-02**	9.65E-04	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	3.64E-01	3.10E-01	2.00E+00	**2E-01**	**2E-01**	4.14E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	2.70E-01	Y	1.64E-01	1.39E-01	6.00E+01	**3E-03**	**2E-03**	1.86E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	5.00E-02	N	3.04E-02	2.58E-02	9.00E+00	**3E-03**	**3E-03**	3.45E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	6.68E-02	5.68E-02	7.00E+00	**1E-02**	**8E-03**	7.58E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.15E-01	N	6.98E-02	5.93E-02	4.00E+00	**2E-02**	**1E-02**	7.93E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	9.50E-02	N	5.77E-02	4.90E-02	6.00E+01	**1E-03**	**8E-04**	6.55E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	3.34E-02	2.84E-02	8.00E+02	**4E-05**	**4E-05**	3.79E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	4.00E-01	Y	2.43E-01	2.06E-01	3.00E+01	**8E-03**	**7E-03**	2.76E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	1.30E-01	N	7.89E-02	6.71E-02	1.00E+00	**8E-02**	**7E-02**	8.96E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	7.89E-02	6.71E-02	NA	**---**	**---**	8.96E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	4.25E-01	3.61E-01	5.00E+00	**9E-02**	**7E-02**	4.83E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	2.31E-01	1.96E-01	1.00E+02	**2E-03**	**2E-03**	2.62E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	2.90E-01	Y	1.76E-01	1.50E-01	9.77E+01	**2E-03**	**2E-03**	2.00E-02	2.30E-05		**5E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.10E-01	Y	1.28E-01	1.08E-01	1.00E+03	**1E-04**	**1E-04**	1.45E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.90E-01	N	2.98E-01	2.53E-01	NA	**---**	**---**	3.38E-02	2.20E-05		**7E-07**
ISOPROPYL ALCOHOL	67-63-0	3.10E+01	Y	1.88E+01	1.60E+01	2.00E+02	**9E-02**	**8E-02**	2.14E+00	-		**---**
M,P-XYLENE	108-38-3	6.80E-01	Y	4.13E-01	3.51E-01	1.00E+02	**4E-03**	**4E-03**	4.69E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	7.20E-01	Y	4.37E-01	3.72E-01	6.00E+02	**7E-04**	**6E-04**	M	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.50E-01	Y	1.52E-01	1.29E-01	1.00E+02	**2E-03**	**1E-03**	1.72E-02	-		**---**
TETRACHLOROETHENE	127-18-4	2.40E-01	Y	1.46E-01	1.24E-01	4.00E+01	**4E-03**	**3E-03**	1.65E-02	2.60E-07		**4E-09**
TRICHLOROETHENE	79-01-6	2.80E-02	Y	1.70E-02	1.44E-02	2.00E+00	**9E-03**	**7E-03**	M	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	4.60E-03	N	2.79E-03	2.37E-03	8.00E+01	**3E-05**	**3E-05**	M	4.40E-06	M	**4E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0072H**	**Total Inhalation**	**6E-01**	**5E-01**	**5E-06**
		Based on NDs only	**4E-01**	**4E-01**	**4E-06**
		Based on Detects only	**1E-01**	**1E-01**	**1E-06**
		Site-related only	**1E-02**	**1E-02**	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0072H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.20E-01	4.16E-02	2.50E-02	5.57E-02	1.86E-02	1.0E-08		4E-10	2E-10	6E-10	2E-10	**1E-09**
TRICHLOROETHENE	79-01-6	2.80E-02	1.62E-03	9.72E-04	2.17E-03	7.22E-04	1.0E-06	kidney	2E-09	1E-09	2E-09	7E-10	**5E-09**
TRICHLOROETHENE	79-01-6	2.80E-02	4.86E-04		1.44E-03		3.1E-06	NHL+liver	2E-09		4E-09		**6E-09**
VINYL CHLORIDE	75-01-4	4.60E-03	2.66E-04	1.60E-04	3.56E-04	1.19E-04	4.4E-06		1E-09	7E-10	2E-09	5E-10	**4E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0076H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.25E-02	N	1.37E-02	1.16E-02	NA	---	---	1.55E-03	5.80E-05		**9E-08**
1,3-BUTADIENE	106-99-0	1.00E-01	N	6.07E-02	5.16E-02	2.00E+00	**3E-02**	**3E-02**	6.89E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	2.50E-01	Y	1.52E-01	1.29E-01	3.00E+01	**5E-03**	**4E-03**	1.72E-02	5.00E-06		**9E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.10E-02	N	1.28E-02	1.08E-02	2.00E-01	**6E-02**	**5E-02**	1.45E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	4.25E-01	3.61E-01	2.00E+00	**2E-01**	**2E-01**	4.83E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.70E+00	Y	1.03E+00	8.77E-01	6.00E+01	**2E-02**	**1E-02**	1.17E-01	-		---
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	4.55E-02	3.87E-02	9.00E+00	**5E-03**	**4E-03**	5.17E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	1.20E-01	Y	7.29E-02	6.19E-02	7.00E+00	**1E-02**	**9E-03**	8.27E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	6.38E-02	5.42E-02	4.00E+00	**2E-02**	**1E-02**	7.24E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	4.10E-01	Y	2.49E-01	2.12E-01	6.00E+01	**4E-03**	**4E-03**	2.83E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	N	5.16E-02	4.39E-02	8.00E+02	**6E-05**	**5E-05**	5.86E-03	1.10E-05		**6E-08**
BENZENE	71-43-2	3.40E+00	Y	2.06E+00	1.75E+00	3.00E+01	**7E-02**	**6E-02**	2.34E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	2.50E-01	N	1.52E-01	1.29E-01	1.00E+00	**2E-01**	**1E-01**	1.72E-02	4.90E-05		**8E-07**
BROMODICHLOROMETHANE	75-27-4	2.55E-01	N	1.55E-01	1.32E-01	NA	---	---	1.76E-02	3.70E-05		**7E-07**
BROMOMETHANE	74-83-9	8.50E-01	N	5.16E-01	4.39E-01	5.00E+00	**1E-01**	**9E-02**	5.86E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	2.79E-01	2.37E-01	1.00E+02	**3E-03**	**2E-03**	3.17E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	7.50E-01	Y	4.55E-01	3.87E-01	9.77E+01	**5E-03**	**4E-03**	5.17E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	4.90E+00	Y	2.98E+00	2.53E+00	7.00E+01	**4E-02**	**4E-02**	3.38E-01	-		---
ETHYLBENZENE	100-41-4	1.80E+00	Y	1.09E+00	9.29E-01	1.00E+03	**1E-03**	**9E-04**	1.24E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	4.86E-01	4.13E-01	NA	---	---	5.52E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	8.50E+00	Y	5.16E+00	4.39E+00	2.00E+02	**3E-02**	**2E-02**	5.86E-01	-		---
M,P-XYLENE	108-38-3	8.60E+00	Y	5.22E+00	4.44E+00	1.00E+02	**5E-02**	**4E-02**	5.93E-01	-		---
METHYLENE CHLORIDE	75-09-2	8.30E-01	Y	5.04E-01	4.28E-01	6.00E+02	**8E-04**	**7E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	2.90E-02	N	1.76E-02	1.50E-02	3.00E+00	**6E-03**	**5E-03**	2.00E-03	3.40E-05		**7E-08**
O-XYLENE	95-47-6	2.20E+00	Y	1.34E+00	1.14E+00	1.00E+02	**1E-02**	**1E-02**	1.52E-01	-		---
TETRACHLOROETHENE	127-18-4	4.90E-02	Y	2.98E-02	2.53E-02	4.00E+01	**7E-04**	**6E-04**	3.38E-03	2.60E-07		**9E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	N	3.04E-02	2.58E-02	2.00E+00	**2E-02**	**1E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		---
VINYL CHLORIDE	75-01-4	7.00E-03	N	4.25E-03	3.61E-03	8.00E+01	**5E-05**	**5E-05**	M	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0076H**	**Total Inhalation**	**9E-01**	**7E-01**	**1E-05**
		Based on NDs only	**6E-01**	**5E-01**	**6E-06**
		Based on Detects only	**2E-01**	**2E-01**	**4E-06**
		Site-related only	**2E-02**	**2E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0076H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.30E-01	4.80E-02	2.88E-02	6.42E-02	2.14E-02	1.0E-08		5E-10	3E-10	6E-10	2E-10	**2E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	2.89E-03	1.74E-03	3.87E-03	1.29E-03	1.0E-06	kidney	3E-09	2E-09	4E-09	1E-09	**1E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	8.68E-04		2.58E-03		3.1E-06	NHL+liver	3E-09		8E-09		**1E-08**
VINYL CHLORIDE	75-01-4	7.00E-03	4.05E-04	2.43E-04	5.42E-04	1.81E-04	4.4E-06		2E-09	1E-09	2E-09	8E-10	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0091H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.20E-02	N	1.34E-02	1.14E-02	NA	---	---	1.52E-03	5.80E-05		**9E-08**
1,3-BUTADIENE	106-99-0	1.00E-01	N	6.07E-02	5.16E-02	2.00E+00	**3E-02**	**3E-02**	6.89E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	2.80E-01	Y	1.70E-01	1.44E-01	3.00E+01	**6E-03**	**5E-03**	1.93E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.05E-02	N	1.24E-02	1.06E-02	2.00E-01	**6E-02**	**5E-02**	1.41E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.00E+00	N	6.07E-01	5.16E-01	2.00E+00	**3E-01**	**3E-01**	6.89E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.10E-01	Y	3.10E-01	2.63E-01	6.00E+01	**5E-03**	**4E-03**	3.52E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	4.25E-02	3.61E-02	9.00E+00	**5E-03**	**4E-03**	4.83E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	4.70E-01	Y	2.85E-01	2.43E-01	7.00E+00	**4E-02**	**3E-02**	3.24E-02	2.60E-05		**8E-07**
1,2-DICHLOROPROPANE	78-87-5	1.10E-01	Y	6.68E-02	5.68E-02	4.00E+00	**2E-02**	**1E-02**	7.58E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	1.25E-01	N	7.59E-02	6.45E-02	6.00E+01	**1E-03**	**1E-03**	8.62E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.30E-01	Y	7.89E-02	6.71E-02	8.00E+02	**1E-04**	**8E-05**	8.96E-03	1.10E-05		**1E-07**
BENZENE	71-43-2	8.30E-01	Y	5.04E-01	4.28E-01	3.00E+01	**2E-02**	**1E-02**	5.72E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	1.49E-01	1.26E-01	1.00E+00	**1E-01**	**1E-01**	1.69E-02	4.90E-05		**8E-07**
BROMODICHLOROMETHANE	75-27-4	6.80E-01	Y	4.13E-01	3.51E-01	NA	---	---	4.69E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	4.86E-01	4.13E-01	5.00E+00	**1E-01**	**8E-02**	5.52E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	7.70E-01	Y	4.68E-01	3.97E-01	1.00E+02	**5E-03**	**4E-03**	5.31E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	3.80E+00	Y	2.31E+00	1.96E+00	9.77E+01	**2E-02**	**2E-02**	2.62E-01	2.30E-05		**6E-06**
ETHYL ACETATE	141-78-6	8.20E+00	Y	4.98E+00	4.23E+00	7.00E+01	**7E-02**	**6E-02**	5.65E-01	-		**---**
ETHYLBENZENE	100-41-4	6.60E-01	Y	4.01E-01	3.41E-01	1.00E+03	**4E-04**	**3E-04**	4.55E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	4.86E-01	4.13E-01	NA	---	---	5.52E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	5.60E+01	Y	3.40E+01	2.89E+01	2.00E+02	**2E-01**	**1E-01**	3.86E+00	-		**---**
M,P-XYLENE	108-38-3	1.90E+00	Y	1.15E+00	9.80E-01	1.00E+02	**1E-02**	**1E-02**	1.31E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	1.10E+00	Y	6.68E-01	5.68E-01	6.00E+02	**1E-03**	**9E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	2.75E-02	N	1.67E-02	1.42E-02	3.00E+00	**6E-03**	**5E-03**	1.90E-03	3.40E-05		**6E-08**
O-XYLENE	95-47-6	7.20E-01	Y	4.37E-01	3.72E-01	1.00E+02	**4E-03**	**4E-03**	4.96E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.80E+01	Y	1.09E+01	9.29E+00	4.00E+01	**3E-01**	**2E-01**	1.24E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	4.30E-01	Y	2.61E-01	2.22E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-03	N	3.95E-03	3.35E-03	8.00E+01	**5E-05**	**4E-05**	M	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0091H**	**Total Inhalation**	**1E+00**	**1E+00**	**2E-05**
		Based on NDs only	**7E-01**	**6E-01**	**5E-06**
		Based on Detects only	**8E-01**	**7E-01**	**1E-05**
		Site-related only	**4E-01**	**3E-01**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0091H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.10E+00	6.36E-02	3.82E-02	8.51E-02	2.84E-02	1.0E-08		6E-10	4E-10	9E-10	3E-10	**2E-09**
TRICHLOROETHENE	79-01-6	4.30E-01	2.49E-02	1.49E-02	3.33E-02	1.11E-02	1.0E-06	kidney	2E-08	1E-08	3E-08	1E-08	**8E-08**
TRICHLOROETHENE	79-01-6	4.30E-01	7.46E-03		2.22E-02		3.1E-06	NHL+liver	2E-08		7E-08		**9E-08**
VINYL CHLORIDE	75-01-4	6.50E-03	3.76E-04	2.26E-04	5.03E-04	1.68E-04	4.4E-06		2E-09	1E-09	2E-09	7E-10	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0098H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	1.31E-02	1.11E-02	NA	---	---	1.48E-03	5.80E-05		**9E-08**
1,3-BUTADIENE	106-99-0	1.00E-01	N	6.07E-02	5.16E-02	2.00E+00	**3E-02**	**3E-02**	6.89E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	1.80E-01	Y	1.09E-01	9.29E-02	3.00E+01	**4E-03**	**3E-03**	1.24E-02	5.00E-06		**6E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	1.21E-02	1.03E-02	2.00E-01	**6E-02**	**5E-02**	1.38E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	3.95E-01	3.35E-01	2.00E+00	**2E-01**	**2E-01**	4.48E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.30E+00	Y	7.89E-01	6.71E-01	6.00E+01	**1E-02**	**1E-02**	8.96E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	4.25E-02	3.61E-02	9.00E+00	**5E-03**	**4E-03**	4.83E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	9.10E-02	Y	5.53E-02	4.70E-02	7.00E+00	**8E-03**	**7E-03**	6.27E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	6.07E-02	5.16E-02	4.00E+00	**2E-02**	**1E-02**	6.89E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	3.30E-01	Y	2.00E-01	1.70E-01	6.00E+01	**3E-03**	**3E-03**	2.28E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.30E+00	Y	7.89E-01	6.71E-01	8.00E+02	**1E-03**	**8E-04**	8.96E-02	1.10E-05		**1E-06**
BENZENE	71-43-2	5.30E+00	Y	3.22E+00	2.73E+00	3.00E+01	**1E-01**	**9E-02**	3.65E-01	7.80E-06		**3E-06**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	1.49E-01	1.26E-01	1.00E+00	**1E-01**	**1E-01**	1.69E-02	4.90E-05		**8E-07**
BROMODICHLOROMETHANE	75-27-4	2.45E-01	N	1.49E-01	1.26E-01	NA	---	---	1.69E-02	3.70E-05		**6E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	4.86E-01	4.13E-01	5.00E+00	**1E-01**	**8E-02**	5.52E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	2.73E-01	2.32E-01	1.00E+02	**3E-03**	**2E-03**	3.10E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	4.60E-01	Y	2.79E-01	2.37E-01	9.77E+01	**3E-03**	**2E-03**	3.17E-02	2.30E-05		**7E-07**
ETHYL ACETATE	141-78-6	1.50E+00	Y	9.11E-01	7.74E-01	7.00E+01	**1E-02**	**1E-02**	1.03E-01	-		**---**
ETHYLBENZENE	100-41-4	3.00E+00	Y	1.82E+00	1.55E+00	1.00E+03	**2E-03**	**2E-03**	2.07E-01	2.50E-06		**5E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	4.86E-01	4.13E-01	NA	---	---	5.52E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	5.40E+00	Y	3.28E+00	2.79E+00	2.00E+02	**2E-02**	**1E-02**	3.72E-01	-		**---**
M,P-XYLENE	108-38-3	1.30E+01	Y	7.89E+00	6.71E+00	1.00E+02	**8E-02**	**7E-02**	8.96E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	4.55E-01	N	2.76E-01	2.35E-01	6.00E+02	**5E-04**	**4E-04**	M	1.00E-08	M	**9E-10**
NAPHTHALENE	91-20-3	2.50E-02	N	1.52E-02	1.29E-02	3.00E+00	**5E-03**	**4E-03**	1.72E-03	3.40E-05		**6E-08**
O-XYLENE	95-47-6	3.50E+00	Y	2.13E+00	1.81E+00	1.00E+02	**2E-02**	**2E-02**	2.41E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.20E+00	Y	7.29E-01	6.19E-01	4.00E+01	**2E-02**	**2E-02**	8.27E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	7.80E-01	Y	4.74E-01	4.02E-01	2.00E+00	**2E-01**	**2E-01**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-03	N	3.95E-03	3.35E-03	8.00E+01	**5E-05**	**4E-05**	M	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0098H**	**Total Inhalation**	**1E+00**	**9E-01**	**1E-05**
		Based on NDs only	**6E-01**	**5E-01**	**6E-06**
		Based on Detects only	**5E-01**	**4E-01**	**6E-06**
		Site-related only	**3E-01**	**2E-01**	**4E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0098H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.55E-01	2.63E-02	1.58E-02	3.52E-02	1.17E-02	1.0E-08		3E-10	2E-10	4E-10	1E-10	**9E-10**
TRICHLOROETHENE	79-01-6	7.80E-01	4.51E-02	2.71E-02	6.04E-02	2.01E-02	1.0E-06	kidney	5E-08	3E-08	6E-08	2E-08	**2E-07**
TRICHLOROETHENE	79-01-6	7.80E-01	1.35E-02		4.02E-02		3.1E-06	NHL+liver	4E-08		1E-07		**2E-07**
VINYL CHLORIDE	75-01-4	6.50E-03	3.76E-04	2.26E-04	5.03E-04	1.68E-04	4.4E-06		2E-09	1E-09	2E-09	7E-10	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0102H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.50E-02	N	9.11E-03	7.74E-03	NA	---	---	1.03E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	2.90E-02	N	1.76E-02	1.50E-02	2.00E+00	**9E-03**	**7E-03**	2.00E-03	3.00E-05		**6E-08**
1,4-DIOXANE	123-91-1	4.20E-01	Y	2.55E-01	2.17E-01	3.00E+01	**9E-03**	**7E-03**	2.90E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.50E-03	N	5.16E-03	4.39E-03	2.00E-01	**3E-02**	**2E-02**	5.86E-04	1.60E-05		**9E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	1.05E+00	N	6.38E-01	5.42E-01	2.00E+00	**3E-01**	**3E-01**	7.24E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.10E+00	Y	3.70E+00	3.15E+00	6.00E+01	**6E-02**	**5E-02**	4.21E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	8.50E-03	N	5.16E-03	4.39E-03	9.00E+00	**6E-04**	**5E-04**	5.86E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	9.00E-01	Y	5.47E-01	4.64E-01	7.00E+00	**8E-02**	**7E-02**	6.21E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	4.00E-02	N	2.43E-02	2.06E-02	4.00E+00	**6E-03**	**5E-03**	2.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	1.70E+00	Y	1.03E+00	8.77E-01	6.00E+01	**2E-02**	**1E-02**	1.17E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.40E-02	N	2.67E-02	2.27E-02	8.00E+02	**3E-05**	**3E-05**	3.03E-03	1.10E-05		**3E-08**
BENZENE	71-43-2	2.50E+00	Y	1.52E+00	1.29E+00	3.00E+01	**5E-02**	**4E-02**	1.72E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	7.00E-02	N	4.25E-02	3.61E-02	1.00E+00	**4E-02**	**4E-02**	4.83E-03	4.90E-05		**2E-07**
BROMODICHLOROMETHANE	75-27-4	3.00E-01	Y	1.82E-01	1.55E-01	NA	---	---	2.07E-02	3.70E-05		**8E-07**
BROMOMETHANE	74-83-9	1.95E-01	N	1.18E-01	1.01E-01	5.00E+00	**2E-02**	**2E-02**	1.34E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	1.20E+00	Y	7.29E-01	6.19E-01	1.00E+02	**7E-03**	**6E-03**	8.27E-02	6.00E-06		**5E-07**
CHLOROFORM	67-66-3	1.40E+00	Y	8.50E-01	7.22E-01	9.77E+01	**9E-03**	**7E-03**	9.65E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	3.60E+00	Y	2.19E+00	1.86E+00	1.00E+03	**2E-03**	**2E-03**	2.48E-01	2.50E-06		**6E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	5.16E-01	4.39E-01	NA	---	---	5.86E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.20E+02	Y	7.29E+01	6.19E+01	2.00E+02	**4E-01**	**3E-01**	8.27E+00	-		**---**
M,P-XYLENE	108-38-3	1.80E+01	Y	1.09E+01	9.29E+00	1.00E+02	**1E-01**	**9E-02**	1.24E+00	-		**---**
METHYLENE CHLORIDE	75-09-2	4.80E-01	N	2.91E-01	2.48E-01	6.00E+02	**5E-04**	**4E-04**	M	1.00E-08	M	**9E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	6.20E+00	Y	3.77E+00	3.20E+00	1.00E+02	**4E-02**	**3E-02**	4.27E-01	-		**---**
TETRACHLOROETHENE	127-18-4	4.70E-01	Y	2.85E-01	2.43E-01	4.00E+01	**7E-03**	**6E-03**	3.24E-02	2.60E-07		**8E-09**
TRICHLOROETHENE	79-01-6	2.00E-02	Y	1.21E-02	1.03E-02	2.00E+00	**6E-03**	**5E-03**	M	4.10E-06	M	**8E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	2.75E-03	N	1.67E-03	1.42E-03	8.00E+01	**2E-05**	**2E-05**	M	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0102H**	**Total Inhalation**	**1E+00**	**1E+00**	**9E-06**
		Based on NDs only	**4E-01**	**4E-01**	**2E-06**
		Based on Detects only	**8E-01**	**6E-01**	**7E-06**
		Site-related only	**2E-02**	**2E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0102H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.80E-01	2.78E-02	1.67E-02	3.72E-02	1.24E-02	1.0E-08		3E-10	2E-10	4E-10	1E-10	**9E-10**
TRICHLOROETHENE	79-01-6	2.00E-02	1.16E-03	6.94E-04	1.55E-03	5.16E-04	1.0E-06	kidney	1E-09	7E-10	2E-09	5E-10	**4E-09**
TRICHLOROETHENE	79-01-6	2.00E-02	3.47E-04		1.03E-03		3.1E-06	NHL+liver	1E-09		3E-09		**4E-09**
VINYL CHLORIDE	75-01-4	2.75E-03	1.59E-04	9.54E-05	2.13E-04	7.09E-05	4.4E-06		7E-10	4E-10	9E-10	3E-10	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0118H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00E-01	N	6.07E-02	5.16E-02	NA	---	---	6.89E-03	5.80E-05		**4E-07**
1,3-BUTADIENE	106-99-0	4.50E-01	N	2.73E-01	2.32E-01	2.00E+00	**1E-01**	**1E-01**	3.10E-02	3.00E-05		**9E-07**
1,4-DIOXANE	123-91-1	1.20E-01	Y	7.29E-02	6.19E-02	3.00E+01	**2E-03**	**2E-03**	8.27E-03	5.00E-06		**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	9.50E-02	N	5.77E-02	4.90E-02	2.00E-01	**3E-01**	**2E-01**	6.55E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	3.05E+00	N	1.85E+00	1.57E+00	2.00E+00	**9E-01**	**8E-01**	2.10E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.70E-01	Y	2.85E-01	2.43E-01	6.00E+01	**5E-03**	**4E-03**	3.24E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.30E-01	N	2.00E-01	1.70E-01	9.00E+00	**2E-02**	**2E-02**	2.28E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	7.80E-02	Y	4.74E-02	4.02E-02	7.00E+00	**7E-03**	**6E-03**	5.38E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	4.70E-01	N	2.85E-01	2.43E-01	4.00E+00	**7E-02**	**6E-02**	3.24E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	5.50E-01	N	3.34E-01	2.84E-01	6.00E+01	**6E-03**	**5E-03**	3.79E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	3.70E-01	N	2.25E-01	1.91E-01	8.00E+02	**3E-04**	**2E-04**	2.55E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	7.30E-01	Y	4.43E-01	3.77E-01	3.00E+01	**1E-02**	**1E-02**	5.03E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	1.10E+00	N	6.68E-01	5.68E-01	1.00E+00	**7E-01**	**6E-01**	7.58E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	1.15E+00	N	6.98E-01	5.93E-01	NA	---	---	7.93E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	3.75E+00	N	2.28E+00	1.93E+00	5.00E+00	**5E-01**	**4E-01**	2.59E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	2.73E-01	2.32E-01	1.00E+02	**3E-03**	**2E-03**	3.10E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	2.20E+00	Y	1.34E+00	1.14E+00	9.77E+01	**1E-02**	**1E-02**	1.52E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	9.00E+00	Y	5.47E+00	4.64E+00	7.00E+01	**8E-02**	**7E-02**	6.21E-01	-		**---**
ETHYLBENZENE	100-41-4	3.90E-01	Y	2.37E-01	2.01E-01	1.00E+03	**2E-04**	**2E-04**	2.69E-02	2.50E-06		**7E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.70E+00	N	2.25E+00	1.91E+00	NA	---	---	2.55E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	1.40E+01	Y	8.50E+00	7.22E+00	2.00E+02	**4E-02**	**4E-02**	9.65E-01	-		**---**
M,P-XYLENE	108-38-3	1.70E+00	Y	1.03E+00	8.77E-01	1.00E+02	**1E-02**	**9E-03**	1.17E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	5.00E+02	Y	3.04E+02	2.58E+02	6.00E+02	**5E-01**	**4E-01**	M	1.00E-08	M	**1E-06**
NAPHTHALENE	91-20-3	2.75E-02	N	1.67E-02	1.42E-02	3.00E+00	**6E-03**	**5E-03**	1.90E-03	3.40E-05		**6E-08**
O-XYLENE	95-47-6	5.40E-01	Y	3.28E-01	2.79E-01	1.00E+02	**3E-03**	**3E-03**	3.72E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.90E+00	Y	2.98E+00	2.53E+00	4.00E+01	**7E-02**	**6E-02**	3.38E-01	2.60E-07		**9E-08**
TRICHLOROETHENE	79-01-6	3.10E-02	Y	1.88E-02	1.60E-02	2.00E+00	**9E-03**	**8E-03**	M	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	3.00E-02	N	1.82E-02	1.55E-02	8.00E+01	**2E-04**	**2E-04**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0118H**	**Total Inhalation**	**3E+00**	**3E+00**	**3E-05**
		Based on NDs only	**3E+00**	**2E+00**	**3E-05**
		Based on Detects only	**8E-01**	**7E-01**	**5E-06**
		Site-related only	**9E-02**	**7E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0118H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.00E+02	2.89E+01	1.74E+01	3.87E+01	1.29E+01	1.0E-08		3E-07	2E-07	4E-07	1E-07	**1E-06**
TRICHLOROETHENE	79-01-6	3.10E-02	1.79E-03	1.08E-03	2.40E-03	8.00E-04	1.0E-06	kidney	2E-09	1E-09	2E-09	8E-10	**6E-09**
TRICHLOROETHENE	79-01-6	3.10E-02	5.38E-04		1.60E-03		3.1E-06	NHL+liver	2E-09		5E-09		**7E-09**
VINYL CHLORIDE	75-01-4	3.00E-02	1.74E-03	1.04E-03	2.32E-03	7.74E-04	4.4E-06		8E-09	5E-09	1E-08	3E-09	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0121H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.90E-02	N	1.76E-02	1.50E-02	NA	---	---	2.00E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	9.00E-02	N	5.47E-02	4.64E-02	2.00E+00	**3E-02**	**2E-02**	6.21E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	2.00E-01	Y	1.21E-01	1.03E-01	3.00E+01	**4E-03**	**3E-03**	1.38E-02	5.00E-06		**7E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.90E-02	N	1.15E-02	9.80E-03	2.00E-01	**6E-02**	**5E-02**	1.31E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	4.25E-01	3.61E-01	2.00E+00	**2E-01**	**2E-01**	4.83E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.35E-01	N	8.20E-02	6.97E-02	6.00E+01	**1E-03**	**1E-03**	9.31E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	4.25E-02	3.61E-02	9.00E+00	**5E-03**	**4E-03**	4.83E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	1.00E-01	Y	6.07E-02	5.16E-02	7.00E+00	**9E-03**	**7E-03**	6.89E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	5.77E-02	4.90E-02	4.00E+00	**1E-02**	**1E-02**	6.55E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	6.98E-02	5.93E-02	6.00E+01	**1E-03**	**1E-03**	7.93E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.10E-02	Y	3.70E-02	3.15E-02	8.00E+02	**5E-05**	**4E-05**	4.21E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	7.30E-01	Y	4.43E-01	3.77E-01	3.00E+01	**1E-02**	**1E-02**	5.03E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	2.30E-01	N	1.40E-01	1.19E-01	1.00E+00	**1E-01**	**1E-01**	1.59E-02	4.90E-05		**8E-07**
BROMODICHLOROMETHANE	75-27-4	2.40E-01	Y	1.46E-01	1.24E-01	NA	---	---	1.65E-02	3.70E-05		**6E-07**
BROMOMETHANE	74-83-9	7.50E-01	N	4.55E-01	3.87E-01	5.00E+00	**9E-02**	**8E-02**	5.17E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	2.73E-01	2.32E-01	1.00E+02	**3E-03**	**2E-03**	3.10E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	9.80E-01	Y	5.95E-01	5.06E-01	9.77E+01	**6E-03**	**5E-03**	6.76E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	2.10E+00	Y	1.28E+00	1.08E+00	7.00E+01	**2E-02**	**2E-02**	1.45E-01	-		**---**
ETHYLBENZENE	100-41-4	3.20E-01	Y	1.94E-01	1.65E-01	1.00E+03	**2E-04**	**2E-04**	2.21E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	4.55E-01	3.87E-01	NA	---	---	5.17E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	5.90E+01	Y	3.58E+01	3.04E+01	2.00E+02	**2E-01**	**2E-01**	4.07E+00	-		**---**
M,P-XYLENE	108-38-3	1.30E+00	Y	7.89E-01	6.71E-01	1.00E+02	**8E-03**	**7E-03**	8.96E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	5.50E-01	N	3.34E-01	2.84E-01	6.00E+02	**6E-04**	**5E-04**	M	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	1.50E-01	Y	9.11E-02	7.74E-02	3.00E+00	**3E-02**	**3E-02**	1.03E-02	3.40E-05		**4E-07**
O-XYLENE	95-47-6	3.90E-01	Y	2.37E-01	2.01E-01	1.00E+02	**2E-03**	**2E-03**	2.69E-02	-		**---**
TETRACHLOROETHENE	127-18-4	3.90E+00	Y	2.37E+00	2.01E+00	4.00E+01	**6E-02**	**5E-02**	2.69E-01	2.60E-07		**7E-08**
TRICHLOROETHENE	79-01-6	5.90E-02	Y	3.58E-02	3.04E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	5.30E-02	Y	3.22E-02	2.73E-02	8.00E+01	**4E-04**	**3E-04**	M	4.40E-06	M	**5E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0121H**	**Total Inhalation**	**9E-01**	**8E-01**	**9E-06**
		Based on NDs only	**6E-01**	**5E-01**	**5E-06**
		Based on Detects only	**4E-01**	**3E-01**	**4E-06**
		Site-related only	**8E-02**	**7E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0121H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.50E-01	3.18E-02	1.91E-02	4.26E-02	1.42E-02	1.0E-08		3E-10	2E-10	4E-10	1E-10	**1E-09**
TRICHLOROETHENE	79-01-6	5.90E-02	3.41E-03	2.05E-03	4.57E-03	1.52E-03	1.0E-06	kidney	3E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	5.90E-02	1.02E-03		3.04E-03		3.1E-06	NHL+liver	3E-09		9E-09		**1E-08**
VINYL CHLORIDE	75-01-4	5.30E-02	3.07E-03	1.84E-03	4.10E-03	1.37E-03	4.4E-06		1E-08	8E-09	2E-08	6E-09	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0122H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00E-02	N	1.21E-02	1.03E-02	NA	---	---	1.38E-03	5.80E-05		**8E-08**
1,3-BUTADIENE	106-99-0	2.30E-01	Y	1.40E-01	1.19E-01	2.00E+00	**7E-02**	**6E-02**	1.59E-02	3.00E-05		**5E-07**
1,4-DIOXANE	123-91-1	1.70E-01	Y	1.03E-01	8.77E-02	3.00E+01	**3E-03**	**3E-03**	1.17E-02	5.00E-06		**6E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.90E-02	N	1.15E-02	9.80E-03	2.00E-01	**6E-02**	**5E-02**	1.31E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	3.64E-01	3.10E-01	2.00E+00	**2E-01**	**2E-01**	4.14E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.20E-01	Y	3.77E-01	3.20E-01	6.00E+01	**6E-03**	**5E-03**	4.27E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.50E-02	N	3.95E-02	3.35E-02	9.00E+00	**4E-03**	**4E-03**	4.48E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	8.60E-02	Y	5.22E-02	4.44E-02	7.00E+00	**7E-03**	**6E-03**	5.93E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	5.77E-02	4.90E-02	4.00E+00	**1E-02**	**1E-02**	6.55E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	6.98E-02	5.93E-02	6.00E+01	**1E-03**	**1E-03**	7.93E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	7.20E-02	Y	4.37E-02	3.72E-02	8.00E+02	**5E-05**	**5E-05**	4.96E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	5.80E-01	Y	3.52E-01	2.99E-01	3.00E+01	**1E-02**	**1E-02**	4.00E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	2.25E-01	N	1.37E-01	1.16E-01	1.00E+00	**1E-01**	**1E-01**	1.55E-02	4.90E-05		**8E-07**
BROMODICHLOROMETHANE	75-27-4	2.30E-01	N	1.40E-01	1.19E-01	NA	**---**	**---**	1.59E-02	3.70E-05		**6E-07**
BROMOMETHANE	74-83-9	7.50E-01	N	4.55E-01	3.87E-01	5.00E+00	**9E-02**	**8E-02**	5.17E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	2.91E-01	2.48E-01	1.00E+02	**3E-03**	**2E-03**	3.31E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	7.40E-01	Y	4.49E-01	3.82E-01	9.77E+01	**5E-03**	**4E-03**	5.10E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	6.30E+00	Y	3.83E+00	3.25E+00	7.00E+01	**5E-02**	**5E-02**	4.34E-01	-		**---**
ETHYLBENZENE	100-41-4	2.30E-01	Y	1.40E-01	1.19E-01	1.00E+03	**1E-04**	**1E-04**	1.59E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	4.55E-01	3.87E-01	NA	**---**	**---**	5.17E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	2.10E+01	Y	1.28E+01	1.08E+01	2.00E+02	**6E-02**	**5E-02**	1.45E+00	-		**---**
M,P-XYLENE	108-38-3	8.10E-01	Y	4.92E-01	4.18E-01	1.00E+02	**5E-03**	**4E-03**	5.58E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	7.00E-01	Y	4.25E-01	3.61E-01	6.00E+02	**7E-04**	**6E-04**	M	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	2.80E-02	N	1.70E-02	1.44E-02	3.00E+00	**6E-03**	**5E-03**	1.93E-03	3.40E-05		**7E-08**
O-XYLENE	95-47-6	3.10E-01	Y	1.88E-01	1.60E-01	1.00E+02	**2E-03**	**2E-03**	2.14E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.80E+00	Y	2.91E+00	2.48E+00	4.00E+01	**7E-02**	**6E-02**	3.31E-01	2.60E-07		**9E-08**
TRICHLOROETHENE	79-01-6	2.20E-02	Y	1.34E-02	1.14E-02	2.00E+00	**7E-03**	**6E-03**	M	4.10E-06	M	**9E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.00E-03	N	3.64E-03	3.10E-03	8.00E+01	**5E-05**	**4E-05**	M	4.40E-06	M	**5E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0122H**	**Total Inhalation**	**8E-01**	**7E-01**	**8E-06**
		Based on NDs only	**5E-01**	**4E-01**	**5E-06**
		Based on Detects only	**3E-01**	**3E-01**	**3E-06**
		Site-related only	**8E-02**	**7E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0122H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.00E-01	4.05E-02	2.43E-02	5.42E-02	1.81E-02	1.0E-08		4E-10	2E-10	5E-10	2E-10	**1E-09**
TRICHLOROETHENE	79-01-6	2.20E-02	1.27E-03	7.63E-04	1.70E-03	5.68E-04	1.0E-06	kidney	1E-09	8E-10	2E-09	6E-10	**4E-09**
TRICHLOROETHENE	79-01-6	2.20E-02	3.82E-04		1.14E-03		3.1E-06	NHL+liver	1E-09		4E-09		**5E-09**
VINYL CHLORIDE	75-01-4	6.00E-03	3.47E-04	2.08E-04	4.64E-04	1.55E-04	4.4E-06		2E-09	9E-10	2E-09	7E-10	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0133H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	1.31E-02	1.11E-02	NA	---	---	1.48E-03	5.80E-05		**9E-08**
1,3-BUTADIENE	106-99-0	9.50E-02	N	5.77E-02	4.90E-02	2.00E+00	**3E-02**	**2E-02**	6.55E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	1.50E-01	Y	9.11E-02	7.74E-02	3.00E+01	**3E-03**	**3E-03**	1.03E-02	5.00E-06		**5E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	1.21E-02	1.03E-02	2.00E-01	**6E-02**	**5E-02**	1.38E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	3.95E-01	3.35E-01	2.00E+00	**2E-01**	**2E-01**	4.48E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.00E-01	Y	3.04E-01	2.58E-01	6.00E+01	**5E-03**	**4E-03**	3.45E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	4.25E-02	3.61E-02	9.00E+00	**5E-03**	**4E-03**	4.83E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	2.50E-01	Y	1.52E-01	1.29E-01	7.00E+00	**2E-02**	**2E-02**	1.72E-02	2.60E-05		**4E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	6.07E-02	5.16E-02	4.00E+00	**2E-02**	**1E-02**	6.89E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	1.25E-01	N	7.59E-02	6.45E-02	6.00E+01	**1E-03**	**1E-03**	8.62E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	2.80E-02	Y	1.70E-02	1.44E-02	8.00E+02	**2E-05**	**2E-05**	1.93E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	9.70E-01	Y	5.89E-01	5.01E-01	3.00E+01	**2E-02**	**2E-02**	6.69E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	2.40E-01	N	1.46E-01	1.24E-01	1.00E+00	**1E-01**	**1E-01**	1.65E-02	4.90E-05		**8E-07**
BROMODICHLOROMETHANE	75-27-4	1.10E+00	Y	6.68E-01	5.68E-01	NA	---	---	7.58E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	4.86E-01	4.13E-01	5.00E+00	**1E-01**	**8E-02**	5.52E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	2.91E-01	2.48E-01	1.00E+02	**3E-03**	**2E-03**	3.31E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	4.70E+00	Y	2.85E+00	2.43E+00	9.77E+01	**3E-02**	**2E-02**	3.24E-01	2.30E-05		**7E-06**
ETHYL ACETATE	141-78-6	7.20E+00	Y	4.37E+00	3.72E+00	7.00E+01	**6E-02**	**5E-02**	4.96E-01	-		**---**
ETHYLBENZENE	100-41-4	3.50E-01	Y	2.13E-01	1.81E-01	1.00E+03	**2E-04**	**2E-04**	2.41E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	4.86E-01	4.13E-01	NA	---	---	5.52E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	2.50E+01	Y	1.52E+01	1.29E+01	2.00E+02	**8E-02**	**6E-02**	1.72E+00	-		**---**
M,P-XYLENE	108-38-3	1.10E+00	Y	6.68E-01	5.68E-01	1.00E+02	**7E-03**	**6E-03**	7.58E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	8.40E-01	Y	5.10E-01	4.33E-01	6.00E+02	**9E-04**	**7E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	2.65E-02	N	1.61E-02	1.37E-02	3.00E+00	**5E-03**	**5E-03**	1.83E-03	3.40E-05		**6E-08**
O-XYLENE	95-47-6	4.80E-01	Y	2.91E-01	2.48E-01	1.00E+02	**3E-03**	**2E-03**	3.31E-02	-		**---**
TETRACHLOROETHENE	127-18-4	3.90E-01	Y	2.37E-01	2.01E-01	4.00E+01	**6E-03**	**5E-03**	2.69E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.40E-02	Y	1.46E-02	1.24E-02	2.00E+00	**7E-03**	**6E-03**	M	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-03	N	3.95E-03	3.35E-03	8.00E+01	**5E-05**	**4E-05**	M	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0133H**	**Total Inhalation**	**8E-01**	**7E-01**	**2E-05**
		Based on NDs only	**6E-01**	**5E-01**	**5E-06**
		Based on Detects only	**2E-01**	**2E-01**	**1E-05**
		Site-related only	**2E-02**	**1E-02**	**7E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0133H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.40E-01	4.86E-02	2.91E-02	6.50E-02	2.17E-02	1.0E-08		5E-10	3E-10	7E-10	2E-10	**2E-09**
TRICHLOROETHENE	79-01-6	2.40E-02	1.39E-03	8.33E-04	1.86E-03	6.19E-04	1.0E-06	kidney	1E-09	8E-10	2E-09	6E-10	**5E-09**
TRICHLOROETHENE	79-01-6	2.40E-02	4.16E-04		1.24E-03		3.1E-06	NHL+liver	1E-09		4E-09		**5E-09**
VINYL CHLORIDE	75-01-4	6.50E-03	3.76E-04	2.26E-04	5.03E-04	1.68E-04	4.4E-06		2E-09	1E-09	2E-09	7E-10	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0135H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	4.05E-02	N	2.46E-02	2.09E-02	NA	---	---	2.79E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	1.80E-01	N	1.09E-01	9.29E-02	2.00E+00	**5E-02**	**5E-02**	1.24E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	1.10E-01	N	6.68E-02	5.68E-02	3.00E+01	**2E-03**	**2E-03**	7.58E-03	5.00E-06		**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	3.75E-02	N	2.28E-02	1.93E-02	2.00E-01	**1E-01**	**1E-01**	2.59E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.20E+00	N	7.29E-01	6.19E-01	2.00E+00	**4E-01**	**3E-01**	8.27E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.60E-01	Y	4.62E-01	3.92E-01	6.00E+01	**8E-03**	**7E-03**	5.24E-02	-		---
1,2-DIBROMOETHANE	106-93-4	1.35E-01	N	8.20E-02	6.97E-02	9.00E+00	**9E-03**	**8E-03**	9.31E-03	6.00E-04		**6E-06**
1,2-DICHLOROETHANE	107-06-2	1.60E-01	Y	9.72E-02	8.26E-02	7.00E+00	**1E-02**	**1E-02**	1.10E-02	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	1.90E-01	N	1.15E-01	9.80E-02	4.00E+00	**3E-02**	**2E-02**	1.31E-02	3.70E-06		**5E-08**
1,3,5-Trimethylbenzene	108-67-8	2.30E-01	N	1.40E-01	1.19E-01	6.00E+01	**2E-03**	**2E-03**	1.59E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	3.00E-02	Y	1.82E-02	1.55E-02	8.00E+02	**2E-05**	**2E-05**	2.07E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	7.10E-01	Y	4.31E-01	3.66E-01	3.00E+01	**1E-02**	**1E-02**	4.90E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	4.50E-01	N	2.73E-01	2.32E-01	1.00E+00	**3E-01**	**2E-01**	3.10E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	4.60E-01	N	2.79E-01	2.37E-01	NA	---	---	3.17E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	1.50E+00	N	9.11E-01	7.74E-01	5.00E+00	**2E-01**	**2E-01**	1.03E-01	-		---
CARBON TETRACHLORIDE	56-23-5	5.00E-01	Y	3.04E-01	2.58E-01	1.00E+02	**3E-03**	**3E-03**	3.45E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.70E+00	Y	1.03E+00	8.77E-01	9.77E+01	**1E-02**	**9E-03**	1.17E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	1.80E+01	Y	1.09E+01	9.29E+00	7.00E+01	**2E-01**	**1E-01**	1.24E+00	-		---
ETHYLBENZENE	100-41-4	1.20E+01	Y	7.29E+00	6.19E+00	1.00E+03	**7E-03**	**6E-03**	8.27E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.50E+00	N	9.11E-01	7.74E-01	NA	---	---	1.03E-01	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	1.40E+01	Y	8.50E+00	7.22E+00	2.00E+02	**4E-02**	**4E-02**	9.65E-01	-		---
M,P-XYLENE	108-38-3	4.10E+01	Y	2.49E+01	2.12E+01	1.00E+02	**2E-01**	**2E-01**	2.83E+00	-		---
METHYLENE CHLORIDE	75-09-2	6.00E-01	N	3.64E-01	3.10E-01	6.00E+02	**6E-04**	**5E-04**	M	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	1.60E-01	Y	9.72E-02	8.26E-02	3.00E+00	**3E-02**	**3E-02**	1.10E-02	3.40E-05		**4E-07**
O-XYLENE	95-47-6	1.20E+01	Y	7.29E+00	6.19E+00	1.00E+02	**7E-02**	**6E-02**	8.27E-01	-		---
TETRACHLOROETHENE	127-18-4	4.50E-01	Y	2.73E-01	2.32E-01	4.00E+01	**7E-03**	**6E-03**	3.10E-02	2.60E-07		**8E-09**
TRICHLOROETHENE	79-01-6	5.50E-02	N	3.34E-02	2.84E-02	2.00E+00	**2E-02**	**1E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		---
VINYL CHLORIDE	75-01-4	1.20E-02	N	7.29E-03	6.19E-03	8.00E+01	**9E-05**	**8E-05**	M	4.40E-06	M	**1E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0135H**	**Total Inhalation**	**2E+00**	**1E+00**	**2E-05**
		Based on NDs only	**1E+00**	**9E-01**	**1E-05**
		Based on Detects only	**6E-01**	**5E-01**	**6E-06**
		Site-related only	**3E-02**	**2E-02**	**8E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0135H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.00E-01	3.47E-02	2.08E-02	4.64E-02	1.55E-02	1.0E-08		3E-10	2E-10	5E-10	2E-10	**1E-09**
TRICHLOROETHENE	79-01-6	5.50E-02	3.18E-03	1.91E-03	4.26E-03	1.42E-03	1.0E-06	kidney	3E-09	2E-09	4E-09	1E-09	**1E-08**
TRICHLOROETHENE	79-01-6	5.50E-02	9.54E-04		2.84E-03		3.1E-06	NHL+liver	3E-09		9E-09		**1E-08**
VINYL CHLORIDE	75-01-4	1.20E-02	6.94E-04	4.16E-04	9.29E-04	3.10E-04	4.4E-06		3E-09	2E-09	4E-09	1E-09	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0137H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	1.31E-02	1.11E-02	NA	---	---	1.48E-03	5.80E-05		**9E-08**
1,3-BUTADIENE	106-99-0	9.50E-02	N	5.77E-02	4.90E-02	2.00E+00	**3E-02**	**2E-02**	6.55E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	1.80E-01	Y	1.09E-01	9.29E-02	3.00E+01	**4E-03**	**3E-03**	1.24E-02	5.00E-06		**6E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	1.21E-02	1.03E-02	2.00E-01	**6E-02**	**5E-02**	1.38E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	3.95E-01	3.35E-01	2.00E+00	**2E-01**	**2E-01**	4.48E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.10E+00	Y	6.68E-01	5.68E-01	6.00E+01	**1E-02**	**9E-03**	7.58E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	4.25E-02	3.61E-02	9.00E+00	**5E-03**	**4E-03**	4.83E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	9.30E-02	Y	5.65E-02	4.80E-02	7.00E+00	**8E-03**	**7E-03**	6.41E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	6.07E-02	5.16E-02	4.00E+00	**2E-02**	**1E-02**	6.89E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	2.50E-01	Y	1.52E-01	1.29E-01	6.00E+01	**3E-03**	**2E-03**	1.72E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	4.86E-02	4.13E-02	8.00E+02	**6E-05**	**5E-05**	5.52E-03	1.10E-05		**6E-08**
BENZENE	71-43-2	3.30E+00	Y	2.00E+00	1.70E+00	3.00E+01	**7E-02**	**6E-02**	2.28E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	2.40E-01	N	1.46E-01	1.24E-01	1.00E+00	**1E-01**	**1E-01**	1.65E-02	4.90E-05		**8E-07**
BROMODICHLOROMETHANE	75-27-4	2.45E-01	N	1.49E-01	1.26E-01	NA	---	---	1.69E-02	3.70E-05		**6E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	4.86E-01	4.13E-01	5.00E+00	**1E-01**	**8E-02**	5.52E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	2.91E-01	2.48E-01	1.00E+02	**3E-03**	**2E-03**	3.31E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.50E+00	Y	9.11E-01	7.74E-01	9.77E+01	**9E-03**	**8E-03**	1.03E-01	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	5.20E+00	Y	3.16E+00	2.68E+00	7.00E+01	**5E-02**	**4E-02**	3.59E-01	-		**---**
ETHYLBENZENE	100-41-4	1.80E+00	Y	1.09E+00	9.29E-01	1.00E+03	**1E-03**	**9E-04**	1.24E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	4.86E-01	4.13E-01	NA	---	---	5.52E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	4.80E+00	Y	2.91E+00	2.48E+00	2.00E+02	**1E-02**	**1E-02**	3.31E-01	-		**---**
M,P-XYLENE	108-38-3	8.80E+00	Y	5.34E+00	4.54E+00	1.00E+02	**5E-02**	**5E-02**	6.07E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	9.40E-01	Y	5.71E-01	4.85E-01	6.00E+02	**1E-03**	**8E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	2.80E-02	N	1.70E-02	1.44E-02	3.00E+00	**6E-03**	**5E-03**	1.93E-03	3.40E-05		**7E-08**
O-XYLENE	95-47-6	2.30E+00	Y	1.40E+00	1.19E+00	1.00E+02	**1E-02**	**1E-02**	1.59E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.20E+00	Y	7.29E-01	6.19E-01	4.00E+01	**2E-02**	**2E-02**	8.27E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	1.30E-01	Y	7.89E-02	6.71E-02	2.00E+00	**4E-02**	**3E-02**	M	4.10E-06	M	**5E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	1.30E-02	Y	7.89E-03	6.71E-03	8.00E+01	**1E-04**	**8E-05**	M	4.40E-06	M	**1E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0137H**	**Total Inhalation**	**8E-01**	**7E-01**	**1E-05**
		Based on NDs only	**6E-01**	**5E-01**	**6E-06**
		Based on Detects only	**3E-01**	**2E-01**	**5E-06**
		Site-related only	**6E-02**	**5E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0137H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.40E-01	5.44E-02	3.26E-02	7.28E-02	2.43E-02	1.0E-08		5E-10	3E-10	7E-10	2E-10	**2E-09**
TRICHLOROETHENE	79-01-6	1.30E-01	7.52E-03	4.51E-03	1.01E-02	3.35E-03	1.0E-06	kidney	8E-09	5E-09	1E-08	3E-09	**3E-08**
TRICHLOROETHENE	79-01-6	1.30E-01	2.26E-03		6.71E-03		3.1E-06	NHL+liver	7E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	1.30E-02	7.52E-04	4.51E-04	1.01E-03	3.35E-04	4.4E-06		3E-09	2E-09	4E-09	1E-09	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0139H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.30E-02	N	1.40E-02	1.19E-02	NA	---	---	1.59E-03	5.80E-05		**9E-08**
1,3-BUTADIENE	106-99-0	1.30E+00	Y	7.89E-01	6.71E-01	2.00E+00	**4E-01**	**3E-01**	8.96E-02	3.00E-05		**3E-06**
1,4-DIOXANE	123-91-1	2.20E-01	Y	1.34E-01	1.14E-01	3.00E+01	**4E-03**	**4E-03**	1.52E-02	5.00E-06		**8E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.15E-02	N	1.31E-02	1.11E-02	2.00E-01	**7E-02**	**6E-02**	1.48E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	4.25E-01	3.61E-01	2.00E+00	**2E-01**	**2E-01**	4.83E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.40E-01	Y	2.67E-01	2.27E-01	6.00E+01	**4E-03**	**4E-03**	3.03E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	4.55E-02	3.87E-02	9.00E+00	**5E-03**	**4E-03**	5.17E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	4.90E-01	Y	2.98E-01	2.53E-01	7.00E+00	**4E-02**	**4E-02**	3.38E-02	2.60E-05		**9E-07**
1,2-DICHLOROPROPANE	78-87-5	1.10E-01	N	6.68E-02	5.68E-02	4.00E+00	**2E-02**	**1E-02**	7.58E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	7.89E-02	6.71E-02	6.00E+01	**1E-03**	**1E-03**	8.96E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.60E+01	Y	3.40E+01	2.89E+01	8.00E+02	**4E-02**	**4E-02**	3.86E+00	1.10E-05		**4E-05**
BENZENE	71-43-2	1.90E+00	Y	1.15E+00	9.80E-01	3.00E+01	**4E-02**	**3E-02**	1.31E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	2.60E-01	N	1.58E-01	1.34E-01	1.00E+00	**2E-01**	**1E-01**	1.79E-02	4.90E-05		**9E-07**
BROMODICHLOROMETHANE	75-27-4	2.60E-01	N	1.58E-01	1.34E-01	NA	---	---	1.79E-02	3.70E-05		**7E-07**
BROMOMETHANE	74-83-9	1.90E+00	Y	1.15E+00	9.80E-01	5.00E+00	**2E-01**	**2E-01**	1.31E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	2.67E-01	2.27E-01	1.00E+02	**3E-03**	**2E-03**	3.03E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.00E+00	Y	6.07E-01	5.16E-01	9.77E+01	**6E-03**	**5E-03**	6.89E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	1.10E+01	Y	6.68E+00	5.68E+00	7.00E+01	**1E-01**	**8E-02**	7.58E-01	-		**---**
ETHYLBENZENE	100-41-4	5.30E-01	Y	3.22E-01	2.73E-01	1.00E+03	**3E-04**	**3E-04**	3.65E-02	2.50E-06		**9E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	5.16E-01	4.39E-01	NA	---	---	5.86E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	3.60E+02	Y	2.19E+02	1.86E+02	2.00E+02	**1E+00**	**9E-01**	2.48E+01	-		**---**
M,P-XYLENE	108-38-3	1.70E+00	Y	1.03E+00	8.77E-01	1.00E+02	**1E-02**	**9E-03**	1.17E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.45E-01	N	2.10E-01	1.78E-01	6.00E+02	**3E-04**	**3E-04**	M	1.00E-08	M	**7E-10**
NAPHTHALENE	91-20-3	3.05E-02	N	1.85E-02	1.57E-02	3.00E+00	**6E-03**	**5E-03**	2.10E-03	3.40E-05		**7E-08**
O-XYLENE	95-47-6	4.40E-01	Y	2.67E-01	2.27E-01	1.00E+02	**3E-03**	**2E-03**	3.03E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.50E-01	Y	9.11E-02	7.74E-02	4.00E+01	**2E-03**	**2E-03**	1.03E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	3.04E-02	2.58E-02	2.00E+00	**2E-02**	**1E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	7.00E-03	N	4.25E-03	3.61E-03	8.00E+01	**5E-05**	**5E-05**	M	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0139H**	**Total Inhalation**	**2E+00**	**2E+00**	**6E-05**
		Based on NDs only	**5E-01**	**4E-01**	**6E-06**
		Based on Detects only	**2E+00**	**2E+00**	**5E-05**
		Site-related only	**2E-02**	**2E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0139H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.45E-01	2.00E-02	1.20E-02	2.67E-02	8.90E-03	1.0E-08		2E-10	1E-10	3E-10	9E-11	**7E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	2.89E-03	1.74E-03	3.87E-03	1.29E-03	1.0E-06	kidney	3E-09	2E-09	4E-09	1E-09	**1E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	8.68E-04		2.58E-03		3.1E-06	NHL+liver	3E-09		8E-09		**1E-08**
VINYL CHLORIDE	75-01-4	7.00E-03	4.05E-04	2.43E-04	5.42E-04	1.81E-04	4.4E-06		2E-09	1E-09	2E-09	8E-10	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0145H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	6.68E-03	5.68E-03	NA	---	---	7.58E-04	5.80E-05		**4E-08**
1,3-BUTADIENE	106-99-0	5.00E-02	N	3.04E-02	2.58E-02	2.00E+00	**2E-02**	**1E-02**	3.45E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	7.50E-02	N	4.55E-02	3.87E-02	3.00E+01	**2E-03**	**1E-03**	5.17E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	4.25E-03	3.61E-03	2.00E-01	**2E-02**	**2E-02**	4.83E-04	1.60E-05		**8E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.90E-01	N	2.98E-01	2.53E-01	2.00E+00	**1E-01**	**1E-01**	3.38E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.50E-01	Y	9.11E-02	7.74E-02	6.00E+01	**2E-03**	**1E-03**	1.03E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.35E-02	N	2.03E-02	1.73E-02	9.00E+00	**2E-03**	**2E-03**	2.31E-03	6.00E-04		**1E-06**
1,2-DICHLOROETHANE	107-06-2	8.30E-02	Y	5.04E-02	4.28E-02	7.00E+00	**7E-03**	**6E-03**	5.72E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	5.77E-02	4.90E-02	4.00E+00	**1E-02**	**1E-02**	6.55E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	3.64E-02	3.10E-02	6.00E+01	**6E-04**	**5E-04**	4.14E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	2.80E+00	Y	1.70E+00	1.44E+00	8.00E+02	**2E-03**	**2E-03**	1.93E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	4.10E-01	Y	2.49E-01	2.12E-01	3.00E+01	**8E-03**	**7E-03**	2.83E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	5.16E-02	4.39E-02	1.00E+00	**5E-02**	**4E-02**	5.86E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	7.89E-02	6.71E-02	NA	---	---	8.96E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	6.50E-01	N	3.95E-01	3.35E-01	5.00E+00	**8E-02**	**7E-02**	4.48E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	7.60E-01	Y	4.62E-01	3.92E-01	1.00E+02	**5E-03**	**4E-03**	5.24E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	3.90E-01	Y	2.37E-01	2.01E-01	9.77E+01	**2E-03**	**2E-03**	2.69E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.30E-01	Y	7.89E-02	6.71E-02	1.00E+03	**8E-05**	**7E-05**	8.96E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	3.95E-01	3.35E-01	NA	---	---	4.48E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.50E+01	Y	9.11E+00	7.74E+00	2.00E+02	**5E-02**	**4E-02**	1.03E+00	-		**---**
M,P-XYLENE	108-38-3	4.10E-01	Y	2.49E-01	2.12E-01	1.00E+02	**2E-03**	**2E-03**	2.83E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	4.30E+00	Y	2.61E+00	2.22E+00	6.00E+02	**4E-03**	**4E-03**	M	1.00E-08	M	**8E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.50E-01	Y	9.11E-02	7.74E-02	1.00E+02	**9E-04**	**8E-04**	1.03E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.70E+00	Y	2.85E+00	2.43E+00	4.00E+01	**7E-02**	**6E-02**	3.24E-01	2.60E-07		**8E-08**
TRICHLOROETHENE	79-01-6	4.50E-02	Y	2.73E-02	2.32E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	8.00E-03	N	4.86E-03	4.13E-03	8.00E+01	**6E-05**	**5E-05**	M	4.40E-06	M	**7E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0145H**	**Total Inhalation**	**5E-01**	**4E-01**	**7E-06**
		Based on NDs only	**3E-01**	**3E-01**	**3E-06**
		Based on Detects only	**2E-01**	**1E-01**	**4E-06**
		Site-related only	**9E-02**	**7E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0145H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.30E+00	2.49E-01	1.49E-01	3.33E-01	1.11E-01	1.0E-08		2E-09	1E-09	3E-09	1E-09	**8E-09**
TRICHLOROETHENE	79-01-6	4.50E-02	2.60E-03	1.56E-03	3.48E-03	1.16E-03	1.0E-06	kidney	3E-09	2E-09	3E-09	1E-09	**9E-09**
TRICHLOROETHENE	79-01-6	4.50E-02	7.81E-04		2.32E-03		3.1E-06	NHL+liver	2E-09		7E-09		**1E-08**
VINYL CHLORIDE	75-01-4	8.00E-03	4.63E-04	2.78E-04	6.19E-04	2.06E-04	4.4E-06		2E-09	1E-09	3E-09	9E-10	**7E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0146H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.25E-02	N	1.37E-02	1.16E-02	NA	---	---	1.55E-03	5.80E-05		**9E-08**
1,3-BUTADIENE	106-99-0	1.00E-01	N	6.07E-02	5.16E-02	2.00E+00	**3E-02**	**3E-02**	6.89E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	2.30E-01	Y	1.40E-01	1.19E-01	3.00E+01	**5E-03**	**4E-03**	1.59E-02	5.00E-06		**8E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.10E-02	N	1.28E-02	1.08E-02	2.00E-01	**6E-02**	**5E-02**	1.45E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.00E+00	N	6.07E-01	5.16E-01	2.00E+00	**3E-01**	**3E-01**	6.89E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.45E-01	N	8.81E-02	7.48E-02	6.00E+01	**1E-03**	**1E-03**	1.00E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	4.55E-02	3.87E-02	9.00E+00	**5E-03**	**4E-03**	5.17E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	8.50E-02	7.22E-02	7.00E+00	**1E-02**	**1E-02**	9.65E-03	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	1.90E-01	N	1.15E-01	9.80E-02	4.00E+00	**3E-02**	**2E-02**	1.31E-02	3.70E-06		**5E-08**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	7.89E-02	6.71E-02	6.00E+01	**1E-03**	**1E-03**	8.96E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.05E-01	N	6.38E-02	5.42E-02	8.00E+02	**8E-05**	**7E-05**	7.24E-03	1.10E-05		**8E-08**
BENZENE	71-43-2	6.80E-01	Y	4.13E-01	3.51E-01	3.00E+01	**1E-02**	**1E-02**	4.69E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	2.50E-01	N	1.52E-01	1.29E-01	1.00E+00	**2E-01**	**1E-01**	1.72E-02	4.90E-05		**8E-07**
BROMODICHLOROMETHANE	75-27-4	2.60E-01	N	1.58E-01	1.34E-01	NA	---	---	1.79E-02	3.70E-05		**7E-07**
BROMOMETHANE	74-83-9	1.35E+00	N	8.20E-01	6.97E-01	5.00E+00	**2E-01**	**1E-01**	9.31E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	6.40E-01	Y	3.89E-01	3.30E-01	1.00E+02	**4E-03**	**3E-03**	4.41E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	1.30E+00	Y	7.89E-01	6.71E-01	9.77E+01	**8E-03**	**7E-03**	8.96E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	3.00E+00	Y	1.82E+00	1.55E+00	7.00E+01	**3E-02**	**2E-02**	2.07E-01	-		**---**
ETHYLBENZENE	100-41-4	1.70E-01	Y	1.03E-01	8.77E-02	1.00E+03	**1E-04**	**9E-05**	1.17E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.35E+00	N	8.20E-01	6.97E-01	NA	---	---	9.31E-02	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	9.00E+01	Y	5.47E+01	4.64E+01	2.00E+02	**3E-01**	**2E-01**	6.21E+00	-		**---**
M,P-XYLENE	108-38-3	5.30E-01	Y	3.22E-01	2.73E-01	1.00E+02	**3E-03**	**3E-03**	3.65E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	3.35E-01	N	2.03E-01	1.73E-01	6.00E+02	**3E-04**	**3E-04**	M	1.00E-08	M	**7E-10**
NAPHTHALENE	91-20-3	2.90E-02	N	1.76E-02	1.50E-02	3.00E+00	**6E-03**	**5E-03**	2.00E-03	3.40E-05		**7E-08**
O-XYLENE	95-47-6	2.20E-01	Y	1.34E-01	1.14E-01	1.00E+02	**1E-03**	**1E-03**	1.52E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.00E+01	Y	6.07E+00	5.16E+00	4.00E+01	**2E-01**	**1E-01**	6.89E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	2.80E-02	Y	1.70E-02	1.44E-02	2.00E+00	**9E-03**	**7E-03**	M	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	1.65E-02	N	1.00E-02	8.51E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**1E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0146H**	**Total Inhalation**	**1E+00**	**1E+00**	**1E-05**
		Based on NDs only	**8E-01**	**6E-01**	**7E-06**
		Based on Detects only	**5E-01**	**4E-01**	**3E-06**
		Site-related only	**2E-01**	**1E-01**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0146H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.35E-01	1.94E-02	1.16E-02	2.59E-02	8.64E-03	1.0E-08		2E-10	1E-10	3E-10	9E-11	**7E-10**
TRICHLOROETHENE	79-01-6	2.80E-02	1.62E-03	9.72E-04	2.17E-03	7.22E-04	1.0E-06	kidney	2E-09	1E-09	2E-09	7E-10	**5E-09**
TRICHLOROETHENE	79-01-6	2.80E-02	4.86E-04		1.44E-03		3.1E-06	NHL+liver	2E-09		4E-09		**6E-09**
VINYL CHLORIDE	75-01-4	1.65E-02	9.54E-04	5.73E-04	1.28E-03	4.26E-04	4.4E-06		4E-09	3E-09	6E-09	2E-09	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0148H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.20E-02	N	1.34E-02	1.14E-02	NA	---	---	1.52E-03	5.80E-05		**9E-08**
1,3-BUTADIENE	106-99-0	1.00E-01	N	6.07E-02	5.16E-02	2.00E+00	**3E-02**	**3E-02**	6.89E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	1.60E-01	Y	9.72E-02	8.26E-02	3.00E+01	**3E-03**	**3E-03**	1.10E-02	5.00E-06		**6E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.05E-02	N	1.24E-02	1.06E-02	2.00E-01	**6E-02**	**5E-02**	1.41E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	3.95E-01	3.35E-01	2.00E+00	**2E-01**	**2E-01**	4.48E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E+00	Y	7.29E-01	6.19E-01	6.00E+01	**1E-02**	**1E-02**	8.27E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	4.55E-02	3.87E-02	9.00E+00	**5E-03**	**4E-03**	5.17E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	6.68E-02	5.68E-02	7.00E+00	**1E-02**	**8E-03**	7.58E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	6.38E-02	5.42E-02	4.00E+00	**2E-02**	**1E-02**	7.24E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	3.90E-01	Y	2.37E-01	2.01E-01	6.00E+01	**4E-03**	**3E-03**	2.69E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.10E-02	Y	2.49E-02	2.12E-02	8.00E+02	**3E-05**	**3E-05**	2.83E-03	1.10E-05		**3E-08**
BENZENE	71-43-2	8.80E-01	Y	5.34E-01	4.54E-01	3.00E+01	**2E-02**	**2E-02**	6.07E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	1.49E-01	1.26E-01	1.00E+00	**1E-01**	**1E-01**	1.69E-02	4.90E-05		**8E-07**
BROMODICHLOROMETHANE	75-27-4	2.50E-01	N	1.52E-01	1.29E-01	NA	---	---	1.72E-02	3.70E-05		**6E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	4.86E-01	4.13E-01	5.00E+00	**1E-01**	**8E-02**	5.52E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.60E-01	Y	3.40E-01	2.89E-01	1.00E+02	**3E-03**	**3E-03**	3.86E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.50E+00	Y	9.11E-01	7.74E-01	9.77E+01	**9E-03**	**8E-03**	1.03E-01	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	8.40E+00	Y	5.10E+00	4.33E+00	7.00E+01	**7E-02**	**6E-02**	5.79E-01	-		**---**
ETHYLBENZENE	100-41-4	6.70E-01	Y	4.07E-01	3.46E-01	1.00E+03	**4E-04**	**3E-04**	4.62E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	4.86E-01	4.13E-01	NA	---	---	5.52E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	6.30E+01	Y	3.83E+01	3.25E+01	2.00E+02	**2E-01**	**2E-01**	4.34E+00	-		**---**
M,P-XYLENE	108-38-3	2.00E+00	Y	1.21E+00	1.03E+00	1.00E+02	**1E-02**	**1E-02**	1.38E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	4.40E+01	Y	2.67E+01	2.27E+01	6.00E+02	**4E-02**	**4E-02**	M	1.00E-08	M	**9E-08**
NAPHTHALENE	91-20-3	5.70E-02	Y	3.46E-02	2.94E-02	3.00E+00	**1E-02**	**1E-02**	3.93E-03	3.40E-05		**1E-07**
O-XYLENE	95-47-6	7.80E-01	Y	4.74E-01	4.02E-01	1.00E+02	**5E-03**	**4E-03**	5.38E-02	-		**---**
TETRACHLOROETHENE	127-18-4	2.20E+00	Y	1.34E+00	1.14E+00	4.00E+01	**3E-02**	**3E-02**	1.52E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	N	3.04E-02	2.58E-02	2.00E+00	**2E-02**	**1E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-03	N	3.95E-03	3.35E-03	8.00E+01	**5E-05**	**4E-05**	M	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0148H**	**Total Inhalation**	**1E+00**	**9E-01**	**1E-05**
		Based on NDs only	**6E-01**	**5E-01**	**6E-06**
		Based on Detects only	**4E-01**	**4E-01**	**4E-06**
		Site-related only	**5E-02**	**4E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0148H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.40E+01	2.54E+00	1.53E+00	3.41E+00	1.14E+00	1.0E-08		3E-08	2E-08	3E-08	1E-08	**9E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	2.89E-03	1.74E-03	3.87E-03	1.29E-03	1.0E-06	kidney	3E-09	2E-09	4E-09	1E-09	**1E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	8.68E-04		2.58E-03		3.1E-06	NHL+liver	3E-09		8E-09		**1E-08**
VINYL CHLORIDE	75-01-4	6.50E-03	3.76E-04	2.26E-04	5.03E-04	1.68E-04	4.4E-06		2E-09	1E-09	2E-09	7E-10	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0153H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.05E-02	N	1.24E-02	1.06E-02	NA	---	---	1.41E-03	5.80E-05		**8E-08**
1,3-BUTADIENE	106-99-0	9.00E-02	N	5.47E-02	4.64E-02	2.00E+00	**3E-02**	**2E-02**	6.21E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	1.90E-01	Y	1.15E-01	9.80E-02	3.00E+01	**4E-03**	**3E-03**	1.31E-02	5.00E-06		**7E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.90E-02	N	1.15E-02	9.80E-03	2.00E-01	**6E-02**	**5E-02**	1.31E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	3.64E-01	3.10E-01	2.00E+00	**2E-01**	**2E-01**	4.14E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.40E-01	Y	2.67E-01	2.27E-01	6.00E+01	**4E-03**	**4E-03**	3.03E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	4.25E-02	3.61E-02	9.00E+00	**5E-03**	**4E-03**	4.83E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	6.68E-02	5.68E-02	7.00E+00	**1E-02**	**8E-03**	7.58E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	5.77E-02	4.90E-02	4.00E+00	**1E-02**	**1E-02**	6.55E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	6.98E-02	5.93E-02	6.00E+01	**1E-03**	**1E-03**	7.93E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	7.50E-02	N	4.55E-02	3.87E-02	8.00E+02	**6E-05**	**5E-05**	5.17E-03	1.10E-05		**6E-08**
BENZENE	71-43-2	7.10E-01	Y	4.31E-01	3.66E-01	3.00E+01	**1E-02**	**1E-02**	4.90E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	2.30E-01	N	1.40E-01	1.19E-01	1.00E+00	**1E-01**	**1E-01**	1.59E-02	4.90E-05		**8E-07**
BROMODICHLOROMETHANE	75-27-4	2.30E-01	N	1.40E-01	1.19E-01	NA	---	---	1.59E-02	3.70E-05		**6E-07**
BROMOMETHANE	74-83-9	7.50E-01	N	4.55E-01	3.87E-01	5.00E+00	**9E-02**	**8E-02**	5.17E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	2.67E-01	2.27E-01	1.00E+02	**3E-03**	**2E-03**	3.03E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.10E+00	Y	6.68E-01	5.68E-01	9.77E+01	**7E-03**	**6E-03**	7.58E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	8.00E+00	Y	4.86E+00	4.13E+00	7.00E+01	**7E-02**	**6E-02**	5.52E-01	-		**---**
ETHYLBENZENE	100-41-4	2.80E-01	Y	1.70E-01	1.44E-01	1.00E+03	**2E-04**	**1E-04**	1.93E-02	2.50E-06		**5E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	4.55E-01	3.87E-01	NA	---	---	5.17E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	7.00E+01	Y	4.25E+01	3.61E+01	2.00E+02	**2E-01**	**2E-01**	4.83E+00	-		**---**
M,P-XYLENE	108-38-3	9.30E-01	Y	5.65E-01	4.80E-01	1.00E+02	**6E-03**	**5E-03**	6.41E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	6.10E-01	Y	3.70E-01	3.15E-01	6.00E+02	**6E-04**	**5E-04**	M	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	2.80E-02	N	1.70E-02	1.44E-02	3.00E+00	**6E-03**	**5E-03**	1.93E-03	3.40E-05		**7E-08**
O-XYLENE	95-47-6	3.20E-01	Y	1.94E-01	1.65E-01	1.00E+02	**2E-03**	**2E-03**	2.21E-02	-		**---**
TETRACHLOROETHENE	127-18-4	8.20E-01	Y	4.98E-01	4.23E-01	4.00E+01	**1E-02**	**1E-02**	5.65E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	N	3.04E-02	2.58E-02	2.00E+00	**2E-02**	**1E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.00E-03	N	3.64E-03	3.10E-03	8.00E+01	**5E-05**	**4E-05**	M	4.40E-06	M	**5E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0153H**	**Total Inhalation**	**9E-01**	**8E-01**	**8E-06**
		Based on NDs only	**5E-01**	**5E-01**	**6E-06**
		Based on Detects only	**3E-01**	**3E-01**	**3E-06**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0153H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.10E-01	3.53E-02	2.12E-02	4.72E-02	1.57E-02	1.0E-08		4E-10	2E-10	5E-10	2E-10	**1E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	2.89E-03	1.74E-03	3.87E-03	1.29E-03	1.0E-06	kidney	3E-09	2E-09	4E-09	1E-09	**1E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	8.68E-04		2.58E-03		3.1E-06	NHL+liver	3E-09		8E-09		**1E-08**
VINYL CHLORIDE	75-01-4	6.00E-03	3.47E-04	2.08E-04	4.64E-04	1.55E-04	4.4E-06		2E-09	9E-10	2E-09	7E-10	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0162H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.50E-02	N	1.52E-02	1.29E-02	NA	---	---	1.72E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	1.15E-01	N	6.98E-02	5.93E-02	2.00E+00	**3E-02**	**3E-02**	7.93E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	2.00E-01	Y	1.21E-01	1.03E-01	3.00E+01	**4E-03**	**3E-03**	1.38E-02	5.00E-06		**7E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.35E-02	N	1.43E-02	1.21E-02	2.00E-01	**7E-02**	**6E-02**	1.62E-03	1.60E-05		**3E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	7.50E-01	N	4.55E-01	3.87E-01	2.00E+00	**2E-01**	**2E-01**	5.17E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E+00	Y	7.29E-01	6.19E-01	6.00E+01	**1E-02**	**1E-02**	8.27E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	8.50E-02	N	5.16E-02	4.39E-02	9.00E+00	**6E-03**	**5E-03**	5.86E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	9.60E-01	Y	5.83E-01	4.95E-01	7.00E+00	**8E-02**	**7E-02**	6.62E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	1.20E-01	N	7.29E-02	6.19E-02	4.00E+00	**2E-02**	**2E-02**	8.27E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	2.90E-01	Y	1.76E-01	1.50E-01	6.00E+01	**3E-03**	**2E-03**	2.00E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.50E-02	N	5.77E-02	4.90E-02	8.00E+02	**7E-05**	**6E-05**	6.55E-03	1.10E-05		**7E-08**
BENZENE	71-43-2	2.50E+00	Y	1.52E+00	1.29E+00	3.00E+01	**5E-02**	**4E-02**	1.72E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	2.80E-01	N	1.70E-01	1.44E-01	1.00E+00	**2E-01**	**1E-01**	1.93E-02	4.90E-05		**9E-07**
BROMODICHLOROMETHANE	75-27-4	2.85E-01	N	1.73E-01	1.47E-01	NA	---	---	1.97E-02	3.70E-05		**7E-07**
BROMOMETHANE	74-83-9	9.50E-01	N	5.77E-01	4.90E-01	5.00E+00	**1E-01**	**1E-01**	6.55E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	2.91E-01	2.48E-01	1.00E+02	**3E-03**	**2E-03**	3.31E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	6.80E-01	Y	4.13E-01	3.51E-01	9.77E+01	**4E-03**	**4E-03**	4.69E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	6.50E-01	Y	3.95E-01	3.35E-01	7.00E+01	**6E-03**	**5E-03**	4.48E-02	-		**---**
ETHYLBENZENE	100-41-4	1.20E+00	Y	7.29E-01	6.19E-01	1.00E+03	**7E-04**	**6E-04**	8.27E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	9.00E-01	N	5.47E-01	4.64E-01	NA	---	---	6.21E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.10E+01	Y	6.68E+00	5.68E+00	2.00E+02	**3E-02**	**3E-02**	7.58E-01	-		**---**
M,P-XYLENE	108-38-3	5.20E+00	Y	3.16E+00	2.68E+00	1.00E+02	**3E-02**	**3E-02**	3.59E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	7.50E-01	Y	4.55E-01	3.87E-01	6.00E+02	**8E-04**	**6E-04**	M	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	2.75E-02	N	1.67E-02	1.42E-02	3.00E+00	**6E-03**	**5E-03**	1.90E-03	3.40E-05		**6E-08**
O-XYLENE	95-47-6	1.50E+00	Y	9.11E-01	7.74E-01	1.00E+02	**9E-03**	**8E-03**	1.03E-01	-		**---**
TETRACHLOROETHENE	127-18-4	5.20E-01	Y	3.16E-01	2.68E-01	4.00E+01	**8E-03**	**7E-03**	3.59E-02	2.60E-07		**9E-09**
TRICHLOROETHENE	79-01-6	2.90E-02	Y	1.76E-02	1.50E-02	2.00E+00	**9E-03**	**7E-03**	M	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	7.50E-03	N	4.55E-03	3.87E-03	8.00E+01	**6E-05**	**5E-05**	M	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0162H**	**Total Inhalation**	**9E-01**	**8E-01**	**1E-05**
		Based on NDs only	**6E-01**	**6E-01**	**7E-06**
		Based on Detects only	**3E-01**	**2E-01**	**5E-06**
		Site-related only	**2E-02**	**2E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0162H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.50E-01	4.34E-02	2.60E-02	5.80E-02	1.93E-02	1.0E-08		4E-10	3E-10	6E-10	2E-10	**1E-09**
TRICHLOROETHENE	79-01-6	2.90E-02	1.68E-03	1.01E-03	2.24E-03	7.48E-04	1.0E-06	kidney	2E-09	1E-09	2E-09	7E-10	**6E-09**
TRICHLOROETHENE	79-01-6	2.90E-02	5.03E-04		1.50E-03		3.1E-06	NHL+liver	2E-09		5E-09		**6E-09**
VINYL CHLORIDE	75-01-4	7.50E-03	4.34E-04	2.60E-04	5.80E-04	1.93E-04	4.4E-06		2E-09	1E-09	3E-09	9E-10	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0166H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00E-02	N	1.21E-02	1.03E-02	NA	---	---	1.38E-03	5.80E-05		**8E-08**
1,3-BUTADIENE	106-99-0	9.00E-02	N	5.47E-02	4.64E-02	2.00E+00	**3E-02**	**2E-02**	6.21E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	1.50E-01	Y	9.11E-02	7.74E-02	3.00E+01	**3E-03**	**3E-03**	1.03E-02	5.00E-06		**5E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.85E-02	N	1.12E-02	9.55E-03	2.00E-01	**6E-02**	**5E-02**	1.28E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.10E+00	N	6.68E-01	5.68E-01	2.00E+00	**3E-01**	**3E-01**	7.58E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.20E-01	Y	1.94E-01	1.65E-01	6.00E+01	**3E-03**	**3E-03**	2.21E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.50E-02	N	3.95E-02	3.35E-02	9.00E+00	**4E-03**	**4E-03**	4.48E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	6.68E-02	5.68E-02	7.00E+00	**1E-02**	**8E-03**	7.58E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	5.77E-02	4.90E-02	4.00E+00	**1E-02**	**1E-02**	6.55E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	6.98E-02	5.93E-02	6.00E+01	**1E-03**	**1E-03**	7.93E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	7.50E-02	N	4.55E-02	3.87E-02	8.00E+02	**6E-05**	**5E-05**	5.17E-03	1.10E-05		**6E-08**
BENZENE	71-43-2	6.20E-01	Y	3.77E-01	3.20E-01	3.00E+01	**1E-02**	**1E-02**	4.27E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	2.25E-01	N	1.37E-01	1.16E-01	1.00E+00	**1E-01**	**1E-01**	1.55E-02	4.90E-05		**8E-07**
BROMODICHLOROMETHANE	75-27-4	2.25E-01	N	1.37E-01	1.16E-01	NA	---	---	1.55E-02	3.70E-05		**6E-07**
BROMOMETHANE	74-83-9	7.50E-01	N	4.55E-01	3.87E-01	5.00E+00	**9E-02**	**8E-02**	5.17E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	2.85E-01	2.43E-01	1.00E+02	**3E-03**	**2E-03**	3.24E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.60E+00	Y	9.72E-01	8.26E-01	9.77E+01	**1E-02**	**8E-03**	1.10E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	1.40E+01	Y	8.50E+00	7.22E+00	7.00E+01	**1E-01**	**1E-01**	9.65E-01	-		---
ETHYLBENZENE	100-41-4	3.30E-01	Y	2.00E-01	1.70E-01	1.00E+03	**2E-04**	**2E-04**	2.28E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	5.16E-01	4.39E-01	NA	---	---	5.86E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	3.80E+02	Y	2.31E+02	1.96E+02	2.00E+02	**1E+00**	**1E+00**	2.62E+01	-		---
M,P-XYLENE	108-38-3	1.10E+00	Y	6.68E-01	5.68E-01	1.00E+02	**7E-03**	**6E-03**	7.58E-02	-		---
METHYLENE CHLORIDE	75-09-2	1.60E+00	Y	9.72E-01	8.26E-01	6.00E+02	**2E-03**	**1E-03**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	2.95E-02	N	1.79E-02	1.52E-02	3.00E+00	**6E-03**	**5E-03**	2.03E-03	3.40E-05		**7E-08**
O-XYLENE	95-47-6	3.60E-01	Y	2.19E-01	1.86E-01	1.00E+02	**2E-03**	**2E-03**	2.48E-02	-		---
TETRACHLOROETHENE	127-18-4	5.70E+00	Y	3.46E+00	2.94E+00	4.00E+01	**9E-02**	**7E-02**	3.93E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	9.80E-01	Y	5.95E-01	5.06E-01	2.00E+00	**3E-01**	**3E-01**	M	4.10E-06	M	**4E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		---
VINYL CHLORIDE	75-01-4	6.00E-03	N	3.64E-03	3.10E-03	8.00E+01	**5E-05**	**4E-05**	M	4.40E-06	M	**5E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0166H**	**Total Inhalation**	**2E+00**	**2E+00**	**1E-05**
		Based on NDs only	**7E-01**	**6E-01**	**6E-06**
		Based on Detects only	**2E+00**	**1E+00**	**4E-06**
		Site-related only	**4E-01**	**3E-01**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0166H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.60E+00	9.25E-02	5.55E-02	1.24E-01	4.13E-02	1.0E-08		9E-10	6E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	9.80E-01	5.67E-02	3.40E-02	7.59E-02	2.53E-02	1.0E-06	kidney	6E-08	3E-08	8E-08	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	9.80E-01	1.70E-02		5.06E-02		3.1E-06	NHL+liver	5E-08		2E-07		**2E-07**
VINYL CHLORIDE	75-01-4	6.00E-03	3.47E-04	2.08E-04	4.64E-04	1.55E-04	4.4E-06		2E-09	9E-10	2E-09	7E-10	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0172H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.30E-02	N	1.40E-02	1.19E-02	NA	---	---	1.59E-03	5.80E-05		**9E-08**
1,3-BUTADIENE	106-99-0	4.75E-02	N	2.88E-02	2.45E-02	2.00E+00	**1E-02**	**1E-02**	3.28E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	8.00E-02	N	4.86E-02	4.13E-02	3.00E+01	**2E-03**	**1E-03**	5.52E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.15E-02	N	6.98E-03	5.93E-03	2.00E-01	**3E-02**	**3E-02**	7.93E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.75E-01	N	2.88E-01	2.45E-01	2.00E+00	**1E-01**	**1E-01**	3.28E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.20E-01	Y	3.16E-01	2.68E-01	6.00E+01	**5E-03**	**4E-03**	3.59E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.15E-02	N	2.52E-02	2.14E-02	9.00E+00	**3E-03**	**2E-03**	2.86E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	7.30E-02	Y	4.43E-02	3.77E-02	7.00E+00	**6E-03**	**5E-03**	5.03E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	5.47E-02	4.64E-02	4.00E+00	**1E-02**	**1E-02**	6.21E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	1.60E-01	Y	9.72E-02	8.26E-02	6.00E+01	**2E-03**	**1E-03**	1.10E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.35E-02	N	2.64E-02	2.24E-02	8.00E+02	**3E-05**	**3E-05**	3.00E-03	1.10E-05		**3E-08**
BENZENE	71-43-2	3.40E-01	Y	2.06E-01	1.75E-01	3.00E+01	**7E-03**	**6E-03**	2.34E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	6.38E-02	5.42E-02	1.00E+00	**6E-02**	**5E-02**	7.24E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.05E-01	N	6.38E-02	5.42E-02	NA	---	---	7.24E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	5.50E-01	N	3.34E-01	2.84E-01	5.00E+00	**7E-02**	**6E-02**	3.79E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	2.49E-01	2.12E-01	1.00E+02	**2E-03**	**2E-03**	2.83E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.40E-01	Y	8.50E-02	7.22E-02	9.77E+01	**9E-04**	**7E-04**	9.65E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	9.80E-02	Y	5.95E-02	5.06E-02	1.00E+03	**6E-05**	**5E-05**	6.76E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.90E-01	N	2.37E-01	2.01E-01	NA	---	---	2.69E-02	2.20E-05		**6E-07**
ISOPROPYL ALCOHOL	67-63-0	1.20E+01	Y	7.29E+00	6.19E+00	2.00E+02	**4E-02**	**3E-02**	8.27E-01	-		**---**
M,P-XYLENE	108-38-3	3.30E-01	Y	2.00E-01	1.70E-01	1.00E+02	**2E-03**	**2E-03**	2.28E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	5.40E-01	Y	3.28E-01	2.79E-01	6.00E+02	**5E-04**	**5E-04**	M	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.20E-01	Y	7.29E-02	6.19E-02	1.00E+02	**7E-04**	**6E-04**	8.27E-03	-		**---**
TETRACHLOROETHENE	127-18-4	4.30E+00	Y	2.61E+00	2.22E+00	4.00E+01	**7E-02**	**6E-02**	2.96E-01	2.60E-07		**8E-08**
TRICHLOROETHENE	79-01-6	2.80E-02	Y	1.70E-02	1.44E-02	2.00E+00	**9E-03**	**7E-03**	M	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	3.65E-03	N	2.22E-03	1.88E-03	8.00E+01	**3E-05**	**2E-05**	M	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0172H**	**Total Inhalation**	**5E-01**	**4E-01**	**4E-06**
		Based on NDs only	**3E-01**	**3E-01**	**3E-06**
		Based on Detects only	**1E-01**	**1E-01**	**8E-07**
		Site-related only	**8E-02**	**6E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0172H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.40E-01	3.12E-02	1.87E-02	4.18E-02	1.39E-02	1.0E-08		3E-10	2E-10	4E-10	1E-10	**1E-09**
TRICHLOROETHENE	79-01-6	2.80E-02	1.62E-03	9.72E-04	2.17E-03	7.22E-04	1.0E-06	kidney	2E-09	1E-09	2E-09	7E-10	**5E-09**
TRICHLOROETHENE	79-01-6	2.80E-02	4.86E-04		1.44E-03		3.1E-06	NHL+liver	2E-09		4E-09		**6E-09**
VINYL CHLORIDE	75-01-4	3.65E-03	2.11E-04	1.27E-04	2.83E-04	9.42E-05	4.4E-06		9E-10	6E-10	1E-09	4E-10	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0173H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.20E-02	N	1.34E-02	1.14E-02	NA	---	---	1.52E-03	5.80E-05		**9E-08**
1,3-BUTADIENE	106-99-0	1.00E-01	N	6.07E-02	5.16E-02	2.00E+00	**3E-02**	**3E-02**	6.89E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	1.40E-01	Y	8.50E-02	7.22E-02	3.00E+01	**3E-03**	**2E-03**	9.65E-03	5.00E-06		**5E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.05E-02	N	1.24E-02	1.06E-02	2.00E-01	**6E-02**	**5E-02**	1.41E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	3.95E-01	3.35E-01	2.00E+00	**2E-01**	**2E-01**	4.48E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.70E-01	Y	2.85E-01	2.43E-01	6.00E+01	**5E-03**	**4E-03**	3.24E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	4.25E-02	3.61E-02	9.00E+00	**5E-03**	**4E-03**	4.83E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	2.00E-01	Y	1.21E-01	1.03E-01	7.00E+00	**2E-02**	**1E-02**	1.38E-02	2.60E-05		**4E-07**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	6.38E-02	5.42E-02	4.00E+00	**2E-02**	**1E-02**	7.24E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	1.25E-01	N	7.59E-02	6.45E-02	6.00E+01	**1E-03**	**1E-03**	8.62E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	4.86E-02	4.13E-02	8.00E+02	**6E-05**	**5E-05**	5.52E-03	1.10E-05		**6E-08**
BENZENE	71-43-2	5.70E-01	Y	3.46E-01	2.94E-01	3.00E+01	**1E-02**	**1E-02**	3.93E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	1.49E-01	1.26E-01	1.00E+00	**1E-01**	**1E-01**	1.69E-02	4.90E-05		**8E-07**
BROMODICHLOROMETHANE	75-27-4	2.50E-01	N	1.52E-01	1.29E-01	NA	---	---	1.72E-02	3.70E-05		**6E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	4.86E-01	4.13E-01	5.00E+00	**1E-01**	**8E-02**	5.52E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	2.73E-01	2.32E-01	1.00E+02	**3E-03**	**2E-03**	3.10E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	2.00E+00	Y	1.21E+00	1.03E+00	9.77E+01	**1E-02**	**1E-02**	1.38E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	7.00E+00	Y	4.25E+00	3.61E+00	7.00E+01	**6E-02**	**5E-02**	4.83E-01	-		**---**
ETHYLBENZENE	100-41-4	1.10E-01	Y	6.68E-02	5.68E-02	1.00E+03	**7E-05**	**6E-05**	7.58E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	4.86E-01	4.13E-01	NA	---	---	5.52E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	2.70E+01	Y	1.64E+01	1.39E+01	2.00E+02	**8E-02**	**7E-02**	1.86E+00	-		**---**
M,P-XYLENE	108-38-3	4.50E-01	Y	2.73E-01	2.32E-01	1.00E+02	**3E-03**	**2E-03**	3.10E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	3.25E-01	N	1.97E-01	1.68E-01	6.00E+02	**3E-04**	**3E-04**	M	1.00E-08	M	**6E-10**
NAPHTHALENE	91-20-3	2.90E-02	N	1.76E-02	1.50E-02	3.00E+00	**6E-03**	**5E-03**	2.00E-03	3.40E-05		**7E-08**
O-XYLENE	95-47-6	2.10E-01	Y	1.28E-01	1.08E-01	1.00E+02	**1E-03**	**1E-03**	1.45E-02	-		**---**
TETRACHLOROETHENE	127-18-4	5.10E+00	Y	3.10E+00	2.63E+00	4.00E+01	**8E-02**	**7E-02**	3.52E-01	2.60E-07		**9E-08**
TRICHLOROETHENE	79-01-6	1.20E-01	Y	7.29E-02	6.19E-02	2.00E+00	**4E-02**	**3E-02**	M	4.10E-06	M	**5E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-03	N	3.95E-03	3.35E-03	8.00E+01	**5E-05**	**4E-05**	M	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0173H**	**Total Inhalation**	**9E-01**	**7E-01**	**1E-05**
		Based on NDs only	**6E-01**	**5E-01**	**6E-06**
		Based on Detects only	**3E-01**	**3E-01**	**4E-06**
		Site-related only	**1E-01**	**1E-01**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0173H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.25E-01	1.88E-02	1.13E-02	2.52E-02	8.38E-03	1.0E-08		2E-10	1E-10	3E-10	8E-11	**6E-10**
TRICHLOROETHENE	79-01-6	1.20E-01	6.94E-03	4.16E-03	9.29E-03	3.10E-03	1.0E-06	kidney	7E-09	4E-09	9E-09	3E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.20E-01	2.08E-03		6.19E-03		3.1E-06	NHL+liver	6E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	6.50E-03	3.76E-04	2.26E-04	5.03E-04	1.68E-04	4.4E-06		2E-09	1E-09	2E-09	7E-10	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0174H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00E-02	N	1.21E-02	1.03E-02	NA	---	---	1.38E-03	5.80E-05		**8E-08**
1,3-BUTADIENE	106-99-0	9.00E-02	N	5.47E-02	4.64E-02	2.00E+00	**3E-02**	**2E-02**	6.21E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	5.50E-01	Y	3.34E-01	2.84E-01	3.00E+01	**1E-02**	**9E-03**	3.79E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.85E-02	N	1.12E-02	9.55E-03	2.00E-01	**6E-02**	**5E-02**	1.28E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	3.64E-01	3.10E-01	2.00E+00	**2E-01**	**2E-01**	4.14E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.40E-01	Y	3.89E-01	3.30E-01	6.00E+01	**6E-03**	**6E-03**	4.41E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.50E-02	N	3.95E-02	3.35E-02	9.00E+00	**4E-03**	**4E-03**	4.48E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	2.20E+00	Y	1.34E+00	1.14E+00	7.00E+00	**2E-01**	**2E-01**	1.52E-01	2.60E-05		**4E-06**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	5.77E-02	4.90E-02	4.00E+00	**1E-02**	**1E-02**	6.55E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	2.20E-01	Y	1.34E-01	1.14E-01	6.00E+01	**2E-03**	**2E-03**	1.52E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.70E-01	Y	1.03E-01	8.77E-02	8.00E+02	**1E-04**	**1E-04**	1.17E-02	1.10E-05		**1E-07**
BENZENE	71-43-2	9.30E-01	Y	5.65E-01	4.80E-01	3.00E+01	**2E-02**	**2E-02**	6.41E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	2.25E-01	N	1.37E-01	1.16E-01	1.00E+00	**1E-01**	**1E-01**	1.55E-02	4.90E-05		**8E-07**
BROMODICHLOROMETHANE	75-27-4	1.00E+00	Y	6.07E-01	5.16E-01	NA	**---**	**---**	6.89E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	7.50E-01	N	4.55E-01	3.87E-01	5.00E+00	**9E-02**	**8E-02**	5.17E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	7.10E-01	Y	4.31E-01	3.66E-01	1.00E+02	**4E-03**	**4E-03**	4.90E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	4.20E+00	Y	2.55E+00	2.17E+00	9.77E+01	**3E-02**	**2E-02**	2.90E-01	2.30E-05		**7E-06**
ETHYL ACETATE	141-78-6	1.00E+01	Y	6.07E+00	5.16E+00	7.00E+01	**9E-02**	**7E-02**	6.89E-01	-		**---**
ETHYLBENZENE	100-41-4	2.30E+00	Y	1.40E+00	1.19E+00	1.00E+03	**1E-03**	**1E-03**	1.59E-01	2.50E-06		**4E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	4.55E-01	3.87E-01	NA	**---**	**---**	5.17E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.80E+01	Y	1.09E+01	9.29E+00	2.00E+02	**5E-02**	**5E-02**	1.24E+00	-		**---**
M,P-XYLENE	108-38-3	8.20E+00	Y	4.98E+00	4.23E+00	1.00E+02	**5E-02**	**4E-02**	5.65E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	2.20E+00	Y	1.34E+00	1.14E+00	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**4E-09**
NAPHTHALENE	91-20-3	2.90E-02	N	1.76E-02	1.50E-02	3.00E+00	**6E-03**	**5E-03**	2.00E-03	3.40E-05		**7E-08**
O-XYLENE	95-47-6	2.30E+00	Y	1.40E+00	1.19E+00	1.00E+02	**1E-02**	**1E-02**	1.59E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.70E+00	Y	1.03E+00	8.77E-01	4.00E+01	**3E-02**	**2E-02**	1.17E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	N	3.04E-02	2.58E-02	2.00E+00	**2E-02**	**1E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	1.00E-01	Y	6.07E-02	5.16E-02	8.00E+01	**8E-04**	**6E-04**	M	4.40E-06	M	**9E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0174H**	**Total Inhalation**	**1E+00**	**9E-01**	**2E-05**
		Based on NDs only	**5E-01**	**5E-01**	**5E-06**
		Based on Detects only	**5E-01**	**4E-01**	**1E-05**
		Site-related only	**5E-02**	**4E-02**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0174H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.20E+00	1.27E-01	7.63E-02	1.70E-01	5.68E-02	1.0E-08		1E-09	8E-10	2E-09	6E-10	**4E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	2.89E-03	1.74E-03	3.87E-03	1.29E-03	1.0E-06	kidney	3E-09	2E-09	4E-09	1E-09	**1E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	8.68E-04		2.58E-03		3.1E-06	NHL+liver	3E-09		8E-09		**1E-08**
VINYL CHLORIDE	75-01-4	1.00E-01	5.78E-03	3.47E-03	7.74E-03	2.58E-03	4.4E-06		3E-08	2E-08	3E-08	1E-08	**9E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0180H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.65E-02	N	1.61E-02	1.37E-02	NA	---	---	1.83E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	5.50E-02	N	3.34E-02	2.84E-02	2.00E+00	**2E-02**	**1E-02**	3.79E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	5.47E-02	4.64E-02	3.00E+01	**2E-03**	**2E-03**	6.21E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.30E-02	N	7.89E-03	6.71E-03	2.00E-01	**4E-02**	**3E-02**	8.96E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.50E-01	N	3.34E-01	2.84E-01	2.00E+00	**2E-01**	**1E-01**	3.79E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	6.00E-02	N	3.64E-02	3.10E-02	6.00E+01	**6E-04**	**5E-04**	4.14E-03	-		---
1,2-DIBROMOETHANE	106-93-4	4.70E-02	N	2.85E-02	2.43E-02	9.00E+00	**3E-03**	**3E-03**	3.24E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	7.30E-02	Y	4.43E-02	3.77E-02	7.00E+00	**6E-03**	**5E-03**	5.03E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	6.38E-02	5.42E-02	4.00E+00	**2E-02**	**1E-02**	7.24E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	9.00E-02	N	5.47E-02	4.64E-02	6.00E+01	**9E-04**	**8E-04**	6.21E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.95E-02	N	3.01E-02	2.55E-02	8.00E+02	**4E-05**	**3E-05**	3.41E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	3.70E-01	Y	2.25E-01	1.91E-01	3.00E+01	**7E-03**	**6E-03**	2.55E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	1.15E-01	N	6.98E-02	5.93E-02	1.00E+00	**7E-02**	**6E-02**	7.93E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.20E-01	N	7.29E-02	6.19E-02	NA	---	---	8.27E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	6.50E-01	N	3.95E-01	3.35E-01	5.00E+00	**8E-02**	**7E-02**	4.48E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	2.55E-01	2.17E-01	1.00E+02	**3E-03**	**2E-03**	2.90E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.30E-01	Y	7.89E-02	6.71E-02	9.77E+01	**8E-04**	**7E-04**	8.96E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	5.60E-02	Y	3.40E-02	2.89E-02	1.00E+03	**3E-05**	**3E-05**	3.86E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.45E-01	N	2.70E-01	2.30E-01	NA	---	---	3.07E-02	2.20E-05		**7E-07**
ISOPROPYL ALCOHOL	67-63-0	1.30E+01	Y	7.89E+00	6.71E+00	2.00E+02	**4E-02**	**3E-02**	8.96E-01	-		---
M,P-XYLENE	108-38-3	1.90E-01	Y	1.15E-01	9.80E-02	1.00E+02	**1E-03**	**1E-03**	1.31E-02	-		---
METHYLENE CHLORIDE	75-09-2	6.80E-01	Y	4.13E-01	3.51E-01	6.00E+02	**7E-04**	**6E-04**	M	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	6.10E-02	Y	3.70E-02	3.15E-02	1.00E+02	**4E-04**	**3E-04**	4.21E-03	-		---
TETRACHLOROETHENE	127-18-4	4.40E-02	Y	2.67E-02	2.27E-02	4.00E+01	**7E-04**	**6E-04**	3.03E-03	2.60E-07		**8E-10**
TRICHLOROETHENE	79-01-6	9.00E-03	N	5.47E-03	4.64E-03	2.00E+00	**3E-03**	**2E-03**	M	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	4.20E-03	N	2.55E-03	2.17E-03	8.00E+01	**3E-05**	**3E-05**	M	4.40E-06	M	**4E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0180H**	**Total Inhalation**	**5E-01**	**4E-01**	**4E-06**
		Based on NDs only	**4E-01**	**3E-01**	**4E-06**
		Based on Detects only	**6E-02**	**5E-02**	**7E-07**
		Site-related only	**5E-03**	**4E-03**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0180H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.80E-01	3.93E-02	2.36E-02	5.26E-02	1.75E-02	1.0E-08		4E-10	2E-10	5E-10	2E-10	**1E-09**
TRICHLOROETHENE	79-01-6	9.00E-03	5.21E-04	3.12E-04	6.97E-04	2.32E-04	1.0E-06	kidney	5E-10	3E-10	7E-10	2E-10	**2E-09**
TRICHLOROETHENE	79-01-6	9.00E-03	1.56E-04		4.64E-04		3.1E-06	NHL+liver	5E-10		1E-09		**2E-09**
VINYL CHLORIDE	75-01-4	4.20E-03	2.43E-04	1.46E-04	3.25E-04	1.08E-04	4.4E-06		1E-09	6E-10	1E-09	5E-10	**4E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0189H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	6.38E-03	5.42E-03	NA	---	---	7.24E-04	5.80E-05		**4E-08**
1,3-BUTADIENE	106-99-0	4.95E-02	N	3.01E-02	2.55E-02	2.00E+00	**2E-02**	**1E-02**	3.41E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	7.00E-02	N	4.25E-02	3.61E-02	3.00E+01	**1E-03**	**1E-03**	4.83E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	4.25E-03	3.61E-03	2.00E-01	**2E-02**	**2E-02**	4.83E-04	1.60E-05		**8E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.85E-01	N	2.95E-01	2.50E-01	2.00E+00	**1E-01**	**1E-01**	3.34E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.30E-01	Y	7.89E-02	6.71E-02	6.00E+01	**1E-03**	**1E-03**	8.96E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	2.00E-02	1.70E-02	9.00E+00	**2E-03**	**2E-03**	2.28E-03	6.00E-04		**1E-06**
1,2-DICHLOROETHANE	107-06-2	7.40E-02	Y	4.49E-02	3.82E-02	7.00E+00	**6E-03**	**5E-03**	5.10E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	5.47E-02	4.64E-02	4.00E+00	**1E-02**	**1E-02**	6.21E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	3.64E-02	3.10E-02	6.00E+01	**6E-04**	**5E-04**	4.14E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	3.04E-02	2.58E-02	8.00E+02	**4E-05**	**3E-05**	3.45E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	4.10E-01	Y	2.49E-01	2.12E-01	3.00E+01	**8E-03**	**7E-03**	2.83E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	5.16E-02	4.39E-02	1.00E+00	**5E-02**	**4E-02**	5.86E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	7.59E-02	6.45E-02	NA	---	---	8.62E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	6.50E-01	N	3.95E-01	3.35E-01	5.00E+00	**8E-02**	**7E-02**	4.48E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	2.85E-01	2.43E-01	1.00E+02	**3E-03**	**2E-03**	3.24E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	8.40E-01	Y	5.10E-01	4.33E-01	9.77E+01	**5E-03**	**4E-03**	5.79E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.70E-01	Y	1.03E-01	8.77E-02	1.00E+03	**1E-04**	**9E-05**	1.17E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	3.95E-01	3.35E-01	NA	---	---	4.48E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	2.40E+02	Y	1.46E+02	1.24E+02	2.00E+02	**7E-01**	**6E-01**	1.65E+01	-		**---**
M,P-XYLENE	108-38-3	4.80E-01	Y	2.91E-01	2.48E-01	1.00E+02	**3E-03**	**2E-03**	3.31E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	2.15E-01	N	1.31E-01	1.11E-01	6.00E+02	**2E-04**	**2E-04**	M	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.70E-01	Y	1.03E-01	8.77E-02	1.00E+02	**1E-03**	**9E-04**	1.17E-02	-		**---**
TETRACHLOROETHENE	127-18-4	2.60E+00	Y	1.58E+00	1.34E+00	4.00E+01	**4E-02**	**3E-02**	1.79E-01	2.60E-07		**5E-08**
TRICHLOROETHENE	79-01-6	1.90E-01	Y	1.15E-01	9.80E-02	2.00E+00	**6E-02**	**5E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	8.00E-03	N	4.86E-03	4.13E-03	8.00E+01	**6E-05**	**5E-05**	M	4.40E-06	M	**7E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0189H**	**Total Inhalation**	**1E+00**	**1E+00**	**5E-06**
		Based on NDs only	**3E-01**	**3E-01**	**3E-06**
		Based on Detects only	**9E-01**	**7E-01**	**2E-06**
		Site-related only	**1E-01**	**8E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0189H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.15E-01	1.24E-02	7.46E-03	1.66E-02	5.55E-03	1.0E-08		1E-10	7E-11	2E-10	6E-11	**4E-10**
TRICHLOROETHENE	79-01-6	1.90E-01	1.10E-02	6.59E-03	1.47E-02	4.90E-03	1.0E-06	kidney	1E-08	7E-09	1E-08	5E-09	**4E-08**
TRICHLOROETHENE	79-01-6	1.90E-01	3.30E-03		9.80E-03		3.1E-06	NHL+liver	1E-08		3E-08		**4E-08**
VINYL CHLORIDE	75-01-4	8.00E-03	4.63E-04	2.78E-04	6.19E-04	2.06E-04	4.4E-06		2E-09	1E-09	3E-09	9E-10	**7E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0192H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	6.68E-03	5.68E-03	NA	---	---	7.58E-04	5.80E-05		**4E-08**
1,3-BUTADIENE	106-99-0	5.00E-02	N	3.04E-02	2.58E-02	2.00E+00	**2E-02**	**1E-02**	3.45E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	7.50E-02	N	4.55E-02	3.87E-02	3.00E+01	**2E-03**	**1E-03**	5.17E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	4.55E-03	3.87E-03	2.00E-01	**2E-02**	**2E-02**	5.17E-04	1.60E-05		**8E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	3.04E-01	2.58E-01	2.00E+00	**2E-01**	**1E-01**	3.45E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.30E-01	Y	7.89E-02	6.71E-02	6.00E+01	**1E-03**	**1E-03**	8.96E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.50E-02	N	2.13E-02	1.81E-02	9.00E+00	**2E-03**	**2E-03**	2.41E-03	6.00E-04		**1E-06**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	4.68E-02	3.97E-02	7.00E+00	**7E-03**	**6E-03**	5.31E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	5.77E-02	4.90E-02	4.00E+00	**1E-02**	**1E-02**	6.55E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	3.64E-02	3.10E-02	6.00E+01	**6E-04**	**5E-04**	4.14E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	3.34E-02	2.84E-02	8.00E+02	**4E-05**	**4E-05**	3.79E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	1.10E+00	Y	6.68E-01	5.68E-01	3.00E+01	**2E-02**	**2E-02**	7.58E-02	7.80E-06		**6E-07**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	5.47E-02	4.64E-02	1.00E+00	**5E-02**	**5E-02**	6.21E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	7.89E-02	6.71E-02	NA	---	---	8.96E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	4.25E-01	3.61E-01	5.00E+00	**9E-02**	**7E-02**	4.83E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	2.85E-01	2.43E-01	1.00E+02	**3E-03**	**2E-03**	3.24E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.30E+00	Y	7.89E-01	6.71E-01	9.77E+01	**8E-03**	**7E-03**	8.96E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.00E-01	Y	1.21E-01	1.03E-01	1.00E+03	**1E-04**	**1E-04**	1.38E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	4.25E-01	3.61E-01	NA	---	---	4.83E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.20E+01	Y	7.29E+00	6.19E+00	2.00E+02	**4E-02**	**3E-02**	8.27E-01	-		**---**
M,P-XYLENE	108-38-3	6.00E-01	Y	3.64E-01	3.10E-01	1.00E+02	**4E-03**	**3E-03**	4.14E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	2.25E-01	N	1.37E-01	1.16E-01	6.00E+02	**2E-04**	**2E-04**	M	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.20E-01	Y	1.34E-01	1.14E-01	1.00E+02	**1E-03**	**1E-03**	1.52E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.60E+01	Y	9.72E+00	8.26E+00	4.00E+01	**2E-01**	**2E-01**	1.10E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	4.30E-01	Y	2.61E-01	2.22E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	8.50E-03	N	5.16E-03	4.39E-03	8.00E+01	**6E-05**	**5E-05**	M	4.40E-06	M	**7E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0192H**	**Total Inhalation**	**8E-01**	**7E-01**	**7E-06**
		Based on NDs only	**3E-01**	**3E-01**	**3E-06**
		Based on Detects only	**5E-01**	**4E-01**	**3E-06**
		Site-related only	**4E-01**	**3E-01**	**5E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0192H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.25E-01	1.30E-02	7.81E-03	1.74E-02	5.80E-03	1.0E-08		1E-10	8E-11	2E-10	6E-11	**4E-10**
TRICHLOROETHENE	79-01-6	4.30E-01	2.49E-02	1.49E-02	3.33E-02	1.11E-02	1.0E-06	kidney	2E-08	1E-08	3E-08	1E-08	**8E-08**
TRICHLOROETHENE	79-01-6	4.30E-01	7.46E-03		2.22E-02		3.1E-06	NHL+liver	2E-08		7E-08		**9E-08**
VINYL CHLORIDE	75-01-4	8.50E-03	4.92E-04	2.95E-04	6.58E-04	2.19E-04	4.4E-06		2E-09	1E-09	3E-09	1E-09	**7E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0193H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	4.16E-02	3.53E-02	NA	---	---	4.72E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	2.22E+00	N	1.35E+00	1.14E+00	2.00E+00	**7E-01**	**6E-01**	1.53E-01	3.00E-05		**5E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	2.19E-01	1.86E-01	3.00E+01	**7E-03**	**6E-03**	2.49E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	4.95E-02	4.21E-02	2.00E-01	**2E-01**	**2E-01**	5.62E-03	1.60E-05		**9E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	1.41E+00	1.20E+00	2.00E+00	**7E-01**	**6E-01**	1.61E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	2.98E-01	2.53E-01	6.00E+01	**5E-03**	**4E-03**	3.39E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	4.68E-02	3.97E-02	9.00E+00	**5E-03**	**4E-03**	5.31E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	1.02E-01	Y	6.19E-02	5.26E-02	7.00E+00	**9E-03**	**8E-03**	7.03E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	4.22E-02	3.59E-02	4.00E+00	**1E-02**	**9E-03**	4.79E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	2.98E-01	2.53E-01	6.00E+01	**5E-03**	**4E-03**	3.39E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	3.64E-02	3.10E-02	8.00E+02	**5E-05**	**4E-05**	4.14E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	4.89E-01	Y	2.97E-01	2.52E-01	3.00E+01	**1E-02**	**8E-03**	3.37E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	3.16E-01	2.68E-01	1.00E+00	**3E-01**	**3E-01**	3.59E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	4.07E-01	3.46E-01	NA	---	---	4.62E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	2.36E-01	2.00E-01	5.00E+00	**5E-02**	**4E-02**	2.68E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.74E-01	Y	3.49E-01	2.96E-01	1.00E+02	**3E-03**	**3E-03**	3.96E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.55E+00	Y	9.41E-01	8.00E-01	9.77E+01	**1E-02**	**8E-03**	1.07E-01	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.86E-01	Y	1.13E-01	9.60E-02	1.00E+03	**1E-04**	**1E-04**	1.28E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	2.04E+00	1.74E+00	NA	---	---	2.32E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL	67-63-0	1.15E+01	Y	6.98E+00	5.93E+00	2.00E+02	**3E-02**	**3E-02**	7.93E-01	-		**---**
M,P-XYLENE	108-38-3	6.76E-01	Y	4.11E-01	3.49E-01	1.00E+02	**4E-03**	**3E-03**	4.66E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	6.74E-01	Y	4.09E-01	3.48E-01	6.00E+02	**7E-04**	**6E-04**	M	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.00E+00	8.51E-01	3.00E+00	**3E-01**	**3E-01**	1.14E-01	3.40E-05		**4E-06**
O-XYLENE	95-47-6	4.34E-01	N	2.63E-01	2.24E-01	1.00E+02	**3E-03**	**2E-03**	2.99E-02	-		**---**
TETRACHLOROETHENE	127-18-4	3.82E+00	Y	2.32E+00	1.97E+00	4.00E+01	**6E-02**	**5E-02**	2.63E-01	2.60E-07		**7E-08**
TRICHLOROETHENE	79-01-6	7.18E-01	Y	4.36E-01	3.70E-01	2.00E+00	**2E-01**	**2E-01**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	3.52E-02	N	2.14E-02	1.82E-02	2.00E+02	**1E-04**	**9E-05**	2.43E-03	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	1.55E-02	1.32E-02	8.00E+01	**2E-04**	**2E-04**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0193H**	**Total Inhalation**	**3E+00**	**2E+00**	**2E-05**
		Based on NDs only	**2E+00**	**2E+00**	**2E-05**
		Based on Detects only	**3E-01**	**3E-01**	**4E-06**
		Site-related only	**3E-01**	**2E-01**	**5E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0193H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.74E-01	3.90E-02	2.34E-02	5.22E-02	1.74E-02	1.0E-08		4E-10	2E-10	5E-10	2E-10	**1E-09**
TRICHLOROETHENE	79-01-6	7.18E-01	4.15E-02	2.49E-02	5.56E-02	1.85E-02	1.0E-06	kidney	4E-08	2E-08	6E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	7.18E-01	1.25E-02		3.70E-02		3.1E-06	NHL+liver	4E-08		1E-07		**2E-07**
VINYL CHLORIDE	75-01-4	2.56E-02	1.48E-03	8.87E-04	1.98E-03	6.59E-04	4.4E-06		7E-09	4E-09	9E-09	3E-09	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0194H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	4.16E-02	3.53E-02	NA	---	---	4.72E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	2.22E+00	N	1.35E+00	1.14E+00	2.00E+00	**7E-01**	**6E-01**	1.53E-01	3.00E-05		**5E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	2.19E-01	1.86E-01	3.00E+01	**7E-03**	**6E-03**	2.49E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	4.95E-02	4.21E-02	2.00E-01	**2E-01**	**2E-01**	5.62E-03	1.60E-05		**9E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	1.41E+00	1.20E+00	2.00E+00	**7E-01**	**6E-01**	1.61E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	2.98E-01	2.53E-01	6.00E+01	**5E-03**	**4E-03**	3.39E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	4.68E-02	3.97E-02	9.00E+00	**5E-03**	**4E-03**	5.31E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	1.22E-01	Y	7.41E-02	6.30E-02	7.00E+00	**1E-02**	**9E-03**	8.41E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	4.22E-02	3.59E-02	4.00E+00	**1E-02**	**9E-03**	4.79E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	2.98E-01	2.53E-01	6.00E+01	**5E-03**	**4E-03**	3.39E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	3.64E-02	3.10E-02	8.00E+02	**5E-05**	**4E-05**	4.14E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	5.69E-01	Y	3.46E-01	2.94E-01	3.00E+01	**1E-02**	**1E-02**	3.92E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	3.16E-01	2.68E-01	1.00E+00	**3E-01**	**3E-01**	3.59E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	4.07E-01	3.46E-01	NA	---	---	4.62E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	2.36E-01	2.00E-01	5.00E+00	**5E-02**	**4E-02**	2.68E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.46E-01	Y	3.32E-01	2.82E-01	1.00E+02	**3E-03**	**3E-03**	3.76E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	7.40E-01	Y	4.49E-01	3.82E-01	9.77E+01	**5E-03**	**4E-03**	5.10E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	4.23E-01	Y	2.57E-01	2.18E-01	1.00E+03	**3E-04**	**2E-04**	2.92E-02	2.50E-06		**7E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	2.04E+00	1.74E+00	NA	---	---	2.32E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL	67-63-0	9.27E+00	Y	5.63E+00	4.78E+00	2.00E+02	**3E-02**	**2E-02**	6.39E-01	-		**---**
M,P-XYLENE	108-38-3	1.14E+00	Y	6.92E-01	5.88E-01	1.00E+02	**7E-03**	**6E-03**	7.86E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	6.67E-01	Y	4.05E-01	3.44E-01	6.00E+02	**7E-04**	**6E-04**	M	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.00E+00	8.51E-01	3.00E+00	**3E-01**	**3E-01**	1.14E-01	3.40E-05		**4E-06**
O-XYLENE	95-47-6	4.34E-01	N	2.63E-01	2.24E-01	1.00E+02	**3E-03**	**2E-03**	2.99E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.06E+01	Y	6.44E+00	5.47E+00	4.00E+01	**2E-01**	**1E-01**	7.31E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	7.18E-01	Y	4.36E-01	3.70E-01	2.00E+00	**2E-01**	**2E-01**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	3.52E-02	N	2.14E-02	1.82E-02	2.00E+02	**1E-04**	**9E-05**	2.43E-03	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	1.55E-02	1.32E-02	8.00E+01	**2E-04**	**2E-04**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0194H**	**Total Inhalation**	**3E+00**	**2E+00**	**2E-05**
		Based on NDs only	**2E+00**	**2E+00**	**2E-05**
		Based on Detects only	**4E-01**	**4E-01**	**2E-06**
		Site-related only	**4E-01**	**3E-01**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0194H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.67E-01	3.86E-02	2.31E-02	5.16E-02	1.72E-02	1.0E-08		4E-10	2E-10	5E-10	2E-10	**1E-09**
TRICHLOROETHENE	79-01-6	7.18E-01	4.15E-02	2.49E-02	5.56E-02	1.85E-02	1.0E-06	kidney	4E-08	2E-08	6E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	7.18E-01	1.25E-02		3.70E-02		3.1E-06	NHL+liver	4E-08		1E-07		**2E-07**
VINYL CHLORIDE	75-01-4	2.56E-02	1.48E-03	8.87E-04	1.98E-03	6.59E-04	4.4E-06		7E-09	4E-09	9E-09	3E-09	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0195H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	4.16E-02	3.53E-02	NA	---	---	4.72E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	2.22E+00	N	1.35E+00	1.14E+00	2.00E+00	**7E-01**	**6E-01**	1.53E-01	3.00E-05		**5E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	2.19E-01	1.86E-01	3.00E+01	**7E-03**	**6E-03**	2.49E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	4.95E-02	4.21E-02	2.00E-01	**2E-01**	**2E-01**	5.62E-03	1.60E-05		**9E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	1.41E+00	1.20E+00	2.00E+00	**7E-01**	**6E-01**	1.61E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.35E+00	Y	3.25E+00	2.76E+00	6.00E+01	**5E-02**	**5E-02**	3.69E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	4.68E-02	3.97E-02	9.00E+00	**5E-03**	**4E-03**	5.31E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	1.24E-01	Y	7.53E-02	6.40E-02	7.00E+00	**1E-02**	**9E-03**	8.55E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	4.22E-02	3.59E-02	4.00E+00	**1E-02**	**9E-03**	4.79E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	1.59E+00	Y	9.66E-01	8.20E-01	6.00E+01	**2E-02**	**1E-02**	1.10E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	3.64E-02	3.10E-02	8.00E+02	**5E-05**	**4E-05**	4.14E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	6.26E-01	Y	3.80E-01	3.23E-01	3.00E+01	**1E-02**	**1E-02**	4.32E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	3.16E-01	2.68E-01	1.00E+00	**3E-01**	**3E-01**	3.59E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	4.07E-01	3.46E-01	NA	---	---	4.62E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	2.36E-01	2.00E-01	5.00E+00	**5E-02**	**4E-02**	2.68E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.96E-01	Y	3.01E-01	2.56E-01	1.00E+02	**3E-03**	**3E-03**	3.42E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	5.55E-01	Y	3.37E-01	2.86E-01	9.77E+01	**3E-03**	**3E-03**	3.83E-02	2.30E-05		**9E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	7.33E-01	Y	4.45E-01	3.78E-01	1.00E+03	**4E-04**	**4E-04**	5.05E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	2.04E+00	1.74E+00	NA	---	---	2.32E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL	67-63-0	2.05E+01	Y	1.24E+01	1.06E+01	2.00E+02	**6E-02**	**5E-02**	1.41E+00	-		**---**
M,P-XYLENE	108-38-3	2.76E+00	Y	1.68E+00	1.42E+00	1.00E+02	**2E-02**	**1E-02**	1.90E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	5.69E-01	Y	3.46E-01	2.94E-01	6.00E+02	**6E-04**	**5E-04**	M	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.00E+00	8.51E-01	3.00E+00	**3E-01**	**3E-01**	1.14E-01	3.40E-05		**4E-06**
O-XYLENE	95-47-6	1.44E+00	Y	8.74E-01	7.43E-01	1.00E+02	**9E-03**	**7E-03**	9.93E-02	-		**---**
TETRACHLOROETHENE	127-18-4	2.27E+00	Y	1.38E+00	1.17E+00	4.00E+01	**3E-02**	**3E-02**	1.57E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	5.95E-02	Y	3.61E-02	3.07E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	2.14E-02	1.82E-02	2.00E+02	**1E-04**	**9E-05**	2.43E-03	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	1.55E-02	1.32E-02	8.00E+01	**2E-04**	**2E-04**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0195H**	**Total Inhalation**	**3E+00**	**2E+00**	**2E-05**
		Based on NDs only	**2E+00**	**2E+00**	**2E-05**
		Based on Detects only	**2E-01**	**2E-01**	**2E-06**
		Site-related only	**6E-02**	**5E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0195H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.69E-01	3.29E-02	1.97E-02	4.40E-02	1.47E-02	1.0E-08		3E-10	2E-10	4E-10	1E-10	**1E-09**
TRICHLOROETHENE	79-01-6	5.95E-02	3.44E-03	2.06E-03	4.61E-03	1.54E-03	1.0E-06	kidney	3E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	5.95E-02	1.03E-03		3.07E-03		3.1E-06	NHL+liver	3E-09		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	1.48E-03	8.87E-04	1.98E-03	6.59E-04	4.4E-06		7E-09	4E-09	9E-09	3E-09	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0197H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.50E-02	N	1.52E-02	1.29E-02	NA	---	---	1.72E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	5.00E-02	N	3.04E-02	2.58E-02	2.00E+00	**2E-02**	**1E-02**	3.45E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	8.50E-02	N	5.16E-02	4.39E-02	3.00E+01	**2E-03**	**1E-03**	5.86E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	7.29E-03	6.19E-03	2.00E-01	**4E-02**	**3E-02**	8.27E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	3.04E-01	2.58E-01	2.00E+00	**2E-01**	**1E-01**	3.45E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.20E-01	Y	1.34E-01	1.14E-01	6.00E+01	**2E-03**	**2E-03**	1.52E-02	-		---
1,2-DIBROMOETHANE	106-93-4	4.45E-02	N	2.70E-02	2.30E-02	9.00E+00	**3E-03**	**3E-03**	3.07E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	8.50E-02	Y	5.16E-02	4.39E-02	7.00E+00	**7E-03**	**6E-03**	5.86E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	6.07E-02	5.16E-02	4.00E+00	**2E-02**	**1E-02**	6.89E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	8.50E-02	N	5.16E-02	4.39E-02	6.00E+01	**9E-04**	**7E-04**	5.86E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	2.10E-01	Y	1.28E-01	1.08E-01	8.00E+02	**2E-04**	**1E-04**	1.45E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	4.30E-01	Y	2.61E-01	2.22E-01	3.00E+01	**9E-03**	**7E-03**	2.96E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	6.68E-02	5.68E-02	1.00E+00	**7E-02**	**6E-02**	7.58E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	6.68E-02	5.68E-02	NA	---	---	7.58E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	6.00E-01	N	3.64E-01	3.10E-01	5.00E+00	**7E-02**	**6E-02**	4.14E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	2.67E-01	2.27E-01	1.00E+02	**3E-03**	**2E-03**	3.03E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.10E+00	Y	6.68E-01	5.68E-01	9.77E+01	**7E-03**	**6E-03**	7.58E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	3.50E-01	Y	2.13E-01	1.81E-01	1.00E+03	**2E-04**	**2E-04**	2.41E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.25E-01	N	2.58E-01	2.19E-01	NA	---	---	2.93E-02	2.20E-05		**6E-07**
ISOPROPYL ALCOHOL	67-63-0	2.90E+01	Y	1.76E+01	1.50E+01	2.00E+02	**9E-02**	**7E-02**	2.00E+00	-		---
M,P-XYLENE	108-38-3	1.20E+00	Y	7.29E-01	6.19E-01	1.00E+02	**7E-03**	**6E-03**	8.27E-02	-		---
METHYLENE CHLORIDE	75-09-2	4.80E-01	Y	2.91E-01	2.48E-01	6.00E+02	**5E-04**	**4E-04**	M	1.00E-08	M	**9E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.10E-01	Y	1.88E-01	1.60E-01	1.00E+02	**2E-03**	**2E-03**	2.14E-02	-		---
TETRACHLOROETHENE	127-18-4	2.30E+01	Y	1.40E+01	1.19E+01	4.00E+01	**3E-01**	**3E-01**	1.59E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	5.80E+00	Y	3.52E+00	2.99E+00	2.00E+00	**2E+00**	**1E+00**	M	4.10E-06	M	**2E-06**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	3.95E-03	N	2.40E-03	2.04E-03	8.00E+01	**3E-05**	**3E-05**	M	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0197H**	**Total Inhalation**	**3E+00**	**2E+00**	**9E-06**
		Based on NDs only	**4E-01**	**3E-01**	**3E-06**
		Based on Detects only	**2E+00**	**2E+00**	**5E-06**
		Site-related only	**2E+00**	**2E+00**	**3E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0197H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.80E-01	2.78E-02	1.67E-02	3.72E-02	1.24E-02	1.0E-08		3E-10	2E-10	4E-10	1E-10	**9E-10**
TRICHLOROETHENE	79-01-6	5.80E+00	3.35E-01	2.01E-01	4.49E-01	1.50E-01	1.0E-06	kidney	3E-07	2E-07	4E-07	1E-07	**1E-06**
TRICHLOROETHENE	79-01-6	5.80E+00	1.01E-01		2.99E-01		3.1E-06	NHL+liver	3E-07		9E-07		**1E-06**
VINYL CHLORIDE	75-01-4	3.95E-03	2.28E-04	1.37E-04	3.06E-04	1.02E-04	4.4E-06		1E-09	6E-10	1E-09	4E-10	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0225H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	4.16E-02	3.53E-02	NA	---	---	4.72E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	2.22E+00	N	1.35E+00	1.14E+00	2.00E+00	**7E-01**	**6E-01**	1.53E-01	3.00E-05		**5E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	2.19E-01	1.86E-01	3.00E+01	**7E-03**	**6E-03**	2.49E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	4.95E-02	4.21E-02	2.00E-01	**2E-01**	**2E-01**	5.62E-03	1.60E-05		**9E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	1.41E+00	1.20E+00	2.00E+00	**7E-01**	**6E-01**	1.61E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	2.98E-01	2.53E-01	6.00E+01	**5E-03**	**4E-03**	3.39E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	4.68E-02	3.97E-02	9.00E+00	**5E-03**	**4E-03**	5.31E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	3.26E-01	Y	1.98E-01	1.68E-01	7.00E+00	**3E-02**	**2E-02**	2.25E-02	2.60E-05		**6E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	4.22E-02	3.59E-02	4.00E+00	**1E-02**	**9E-03**	4.79E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	2.98E-01	2.53E-01	6.00E+01	**5E-03**	**4E-03**	3.39E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.80E-01	Y	5.95E-01	5.06E-01	8.00E+02	**7E-04**	**6E-04**	6.76E-02	1.10E-05		**7E-07**
BENZENE	71-43-2	5.21E-01	Y	3.16E-01	2.69E-01	3.00E+01	**1E-02**	**9E-03**	3.59E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	3.16E-01	2.68E-01	1.00E+00	**3E-01**	**3E-01**	3.59E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	4.07E-01	3.46E-01	NA	---	---	4.62E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	2.36E-01	2.00E-01	5.00E+00	**5E-02**	**4E-02**	2.68E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	6.87E-01	Y	4.17E-01	3.54E-01	1.00E+02	**4E-03**	**4E-03**	4.74E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	3.59E-01	Y	2.18E-01	1.85E-01	9.77E+01	**2E-03**	**2E-03**	2.48E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	6.29E-01	Y	3.82E-01	3.25E-01	1.00E+03	**4E-04**	**3E-04**	4.34E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	2.04E+00	1.74E+00	NA	---	---	2.32E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL	67-63-0	1.24E+01	Y	7.53E+00	6.40E+00	2.00E+02	**4E-02**	**3E-02**	8.55E-01	-		**---**
M,P-XYLENE	108-38-3	2.17E+00	Y	1.32E+00	1.12E+00	1.00E+02	**1E-02**	**1E-02**	1.50E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	7.43E-01	Y	4.51E-01	3.83E-01	6.00E+02	**8E-04**	**6E-04**	M	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.00E+00	8.51E-01	3.00E+00	**3E-01**	**3E-01**	1.14E-01	3.40E-05		**4E-06**
O-XYLENE	95-47-6	7.24E-01	Y	4.40E-01	3.74E-01	1.00E+02	**4E-03**	**4E-03**	4.99E-02	-		**---**
TETRACHLOROETHENE	127-18-4	2.57E-01	Y	1.56E-01	1.33E-01	4.00E+01	**4E-03**	**3E-03**	1.77E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	6.54E-02	Y	3.97E-02	3.37E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	2.14E-02	1.82E-02	2.00E+02	**1E-04**	**9E-05**	2.43E-03	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	1.55E-02	1.32E-02	8.00E+01	**2E-04**	**2E-04**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0225H**	**Total Inhalation**	**2E+00**	**2E+00**	**2E-05**
		Based on NDs only	**2E+00**	**2E+00**	**2E-05**
		Based on Detects only	**1E-01**	**1E-01**	**3E-06**
		Site-related only	**3E-02**	**3E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0225H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.43E-01	4.30E-02	2.58E-02	5.75E-02	1.92E-02	1.0E-08		4E-10	3E-10	6E-10	2E-10	**1E-09**
TRICHLOROETHENE	79-01-6	6.54E-02	3.78E-03	2.27E-03	5.06E-03	1.69E-03	1.0E-06	kidney	4E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	6.54E-02	1.13E-03		3.37E-03		3.1E-06	NHL+liver	4E-09		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	1.48E-03	8.87E-04	1.98E-03	6.59E-04	4.4E-06		7E-09	4E-09	9E-09	3E-09	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0230H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	6.38E-03	5.42E-03	NA	---	---	7.24E-04	5.80E-05		**4E-08**
1,3-BUTADIENE	106-99-0	4.95E-02	N	3.01E-02	2.55E-02	2.00E+00	**2E-02**	**1E-02**	3.41E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	7.00E-02	N	4.25E-02	3.61E-02	3.00E+01	**1E-03**	**1E-03**	4.83E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	4.25E-03	3.61E-03	2.00E-01	**2E-02**	**2E-02**	4.83E-04	1.60E-05		**8E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.85E-01	N	2.95E-01	2.50E-01	2.00E+00	**1E-01**	**1E-01**	3.34E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.90E-01	Y	1.15E-01	9.80E-02	6.00E+01	**2E-03**	**2E-03**	1.31E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	2.00E-02	1.70E-02	9.00E+00	**2E-03**	**2E-03**	2.28E-03	6.00E-04		**1E-06**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	8.50E-02	7.22E-02	7.00E+00	**1E-02**	**1E-02**	9.65E-03	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	5.47E-02	4.64E-02	4.00E+00	**1E-02**	**1E-02**	6.21E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	3.64E-02	3.10E-02	6.00E+01	**6E-04**	**5E-04**	4.14E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	3.04E-02	2.58E-02	8.00E+02	**4E-05**	**3E-05**	3.45E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	5.30E-01	Y	3.22E-01	2.73E-01	3.00E+01	**1E-02**	**9E-03**	3.65E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	5.16E-02	4.39E-02	1.00E+00	**5E-02**	**4E-02**	5.86E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	7.59E-02	6.45E-02	NA	---	---	8.62E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	6.50E-01	N	3.95E-01	3.35E-01	5.00E+00	**8E-02**	**7E-02**	4.48E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.90E-01	Y	2.37E-01	2.01E-01	1.00E+02	**2E-03**	**2E-03**	2.69E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	9.60E-01	Y	5.83E-01	4.95E-01	9.77E+01	**6E-03**	**5E-03**	6.62E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.50E-01	Y	9.11E-02	7.74E-02	1.00E+03	**9E-05**	**8E-05**	1.03E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	3.95E-01	3.35E-01	NA	---	---	4.48E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	5.50E+01	Y	3.34E+01	2.84E+01	2.00E+02	**2E-01**	**1E-01**	3.79E+00	-		**---**
M,P-XYLENE	108-38-3	5.20E-01	Y	3.16E-01	2.68E-01	1.00E+02	**3E-03**	**3E-03**	3.59E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	2.75E-01	N	1.67E-01	1.42E-01	6.00E+02	**3E-04**	**2E-04**	M	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.00E-01	Y	1.21E-01	1.03E-01	1.00E+02	**1E-03**	**1E-03**	1.38E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.80E-02	Y	2.91E-02	2.48E-02	4.00E+01	**7E-04**	**6E-04**	3.31E-03	2.60E-07		**9E-10**
TRICHLOROETHENE	79-01-6	1.65E-02	N	1.00E-02	8.51E-03	2.00E+00	**5E-03**	**4E-03**	M	4.10E-06	M	**7E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	8.00E-03	N	4.86E-03	4.13E-03	8.00E+01	**6E-05**	**5E-05**	M	4.40E-06	M	**7E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0230H**	**Total Inhalation**	**5E-01**	**5E-01**	**5E-06**
		Based on NDs only	**3E-01**	**3E-01**	**3E-06**
		Based on Detects only	**2E-01**	**2E-01**	**2E-06**
		Site-related only	**7E-03**	**6E-03**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0230H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.75E-01	1.59E-02	9.54E-03	2.13E-02	7.09E-03	1.0E-08		2E-10	1E-10	2E-10	7E-11	**5E-10**
TRICHLOROETHENE	79-01-6	1.65E-02	9.54E-04	5.73E-04	1.28E-03	4.26E-04	1.0E-06	kidney	1E-09	6E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.65E-02	2.86E-04		8.51E-04		3.1E-06	NHL+liver	9E-10		3E-09		**4E-09**
VINYL CHLORIDE	75-01-4	8.00E-03	4.63E-04	2.78E-04	6.19E-04	2.06E-04	4.4E-06		2E-09	1E-09	3E-09	9E-10	**7E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0255H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	4.16E-02	3.53E-02	NA	---	---	4.72E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	2.22E+00	N	1.35E+00	1.14E+00	2.00E+00	**7E-01**	**6E-01**	1.53E-01	3.00E-05		**5E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	2.19E-01	1.86E-01	3.00E+01	**7E-03**	**6E-03**	2.49E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	4.95E-02	4.21E-02	2.00E-01	**2E-01**	**2E-01**	5.62E-03	1.60E-05		**9E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	1.41E+00	1.20E+00	2.00E+00	**7E-01**	**6E-01**	1.61E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	2.98E-01	2.53E-01	6.00E+01	**5E-03**	**4E-03**	3.39E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	4.68E-02	3.97E-02	9.00E+00	**5E-03**	**4E-03**	5.31E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	1.41E-01	Y	8.56E-02	7.28E-02	7.00E+00	**1E-02**	**1E-02**	9.72E-03	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	4.22E-02	3.59E-02	4.00E+00	**1E-02**	**9E-03**	4.79E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	2.98E-01	2.53E-01	6.00E+01	**5E-03**	**4E-03**	3.39E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.77E-02	Y	3.50E-02	2.98E-02	8.00E+02	**4E-05**	**4E-05**	3.98E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	6.71E-01	Y	4.07E-01	3.46E-01	3.00E+01	**1E-02**	**1E-02**	4.63E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	3.16E-01	2.68E-01	1.00E+00	**3E-01**	**3E-01**	3.59E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	4.07E-01	3.46E-01	NA	---	---	4.62E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	2.36E-01	2.00E-01	5.00E+00	**5E-02**	**4E-02**	2.68E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.87E-01	Y	2.96E-01	2.51E-01	1.00E+02	**3E-03**	**3E-03**	3.36E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.47E+00	Y	8.93E-01	7.59E-01	9.77E+01	**9E-03**	**8E-03**	1.01E-01	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.02E-01	Y	1.23E-01	1.04E-01	1.00E+03	**1E-04**	**1E-04**	1.39E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	2.04E+00	1.74E+00	NA	---	---	2.32E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL	67-63-0	2.15E+00	Y	1.31E+00	1.11E+00	2.00E+02	**7E-03**	**6E-03**	1.48E-01	-		**---**
M,P-XYLENE	108-38-3	8.65E-01	N	5.25E-01	4.46E-01	1.00E+02	**5E-03**	**4E-03**	5.96E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	8.82E-01	Y	5.36E-01	4.55E-01	6.00E+02	**9E-04**	**8E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.00E+00	8.51E-01	3.00E+00	**3E-01**	**3E-01**	1.14E-01	3.40E-05		**4E-06**
O-XYLENE	95-47-6	4.34E-01	N	2.63E-01	2.24E-01	1.00E+02	**3E-03**	**2E-03**	2.99E-02	-		**---**
TETRACHLOROETHENE	127-18-4	2.69E+00	Y	1.63E+00	1.39E+00	4.00E+01	**4E-02**	**3E-02**	1.85E-01	2.60E-07		**5E-08**
TRICHLOROETHENE	79-01-6	1.91E-01	Y	1.16E-01	9.86E-02	2.00E+00	**6E-02**	**5E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	2.14E-02	1.82E-02	2.00E+02	**1E-04**	**9E-05**	2.43E-03	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	1.55E-02	1.32E-02	8.00E+01	**2E-04**	**2E-04**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0255H**	**Total Inhalation**	**3E+00**	**2E+00**	**2E-05**
		Based on NDs only	**2E+00**	**2E+00**	**2E-05**
		Based on Detects only	**1E-01**	**1E-01**	**3E-06**
		Site-related only	**1E-01**	**9E-02**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0255H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.82E-01	5.10E-02	3.06E-02	6.83E-02	2.28E-02	1.0E-08		5E-10	3E-10	7E-10	2E-10	**2E-09**
TRICHLOROETHENE	79-01-6	1.91E-01	1.10E-02	6.63E-03	1.48E-02	4.93E-03	1.0E-06	kidney	1E-08	7E-09	1E-08	5E-09	**4E-08**
TRICHLOROETHENE	79-01-6	1.91E-01	3.31E-03		9.86E-03		3.1E-06	NHL+liver	1E-08		3E-08		**4E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	1.48E-03	8.87E-04	1.98E-03	6.59E-04	4.4E-06		7E-09	4E-09	9E-09	3E-09	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0256H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	4.16E-02	3.53E-02	NA	---	---	4.72E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	2.22E+00	N	1.35E+00	1.14E+00	2.00E+00	**7E-01**	**6E-01**	1.53E-01	3.00E-05		**5E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	2.19E-01	1.86E-01	3.00E+01	**7E-03**	**6E-03**	2.49E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	4.95E-02	4.21E-02	2.00E-01	**2E-01**	**2E-01**	5.62E-03	1.60E-05		**9E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	1.41E+00	1.20E+00	2.00E+00	**7E-01**	**6E-01**	1.61E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	2.98E-01	2.53E-01	6.00E+01	**5E-03**	**4E-03**	3.39E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	4.68E-02	3.97E-02	9.00E+00	**5E-03**	**4E-03**	5.31E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	1.04E-01	Y	6.32E-02	5.37E-02	7.00E+00	**9E-03**	**8E-03**	7.17E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	4.22E-02	3.59E-02	4.00E+00	**1E-02**	**9E-03**	4.79E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	2.98E-01	2.53E-01	6.00E+01	**5E-03**	**4E-03**	3.39E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.91E-02	Y	4.20E-02	3.57E-02	8.00E+02	**5E-05**	**4E-05**	4.76E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	5.72E-01	Y	3.47E-01	2.95E-01	3.00E+01	**1E-02**	**1E-02**	3.94E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	3.16E-01	2.68E-01	1.00E+00	**3E-01**	**3E-01**	3.59E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	4.07E-01	3.46E-01	NA	---	---	4.62E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	2.36E-01	2.00E-01	5.00E+00	**5E-02**	**4E-02**	2.68E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.86E-01	Y	2.95E-01	2.51E-01	1.00E+02	**3E-03**	**3E-03**	3.35E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.49E-01	Y	2.12E-01	1.80E-01	9.77E+01	**2E-03**	**2E-03**	2.41E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.68E-01	Y	1.02E-01	8.67E-02	1.00E+03	**1E-04**	**9E-05**	1.16E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	2.04E+00	1.74E+00	NA	---	---	2.32E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL	67-63-0	2.07E+00	Y	1.26E+00	1.07E+00	2.00E+02	**6E-03**	**5E-03**	1.43E-01	-		**---**
M,P-XYLENE	108-38-3	6.85E-01	Y	4.16E-01	3.53E-01	1.00E+02	**4E-03**	**4E-03**	4.72E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	6.77E-01	Y	4.11E-01	3.49E-01	6.00E+02	**7E-04**	**6E-04**	M	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.00E+00	8.51E-01	3.00E+00	**3E-01**	**3E-01**	1.14E-01	3.40E-05		**4E-06**
O-XYLENE	95-47-6	4.34E-01	N	2.63E-01	2.24E-01	1.00E+02	**3E-03**	**2E-03**	2.99E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.84E-01	Y	1.12E-01	9.49E-02	4.00E+01	**3E-03**	**2E-03**	1.27E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	6.16E-02	Y	3.74E-02	3.18E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	2.14E-02	1.82E-02	2.00E+02	**1E-04**	**9E-05**	2.43E-03	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	1.55E-02	1.32E-02	8.00E+01	**2E-04**	**2E-04**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0256H**	**Total Inhalation**	**2E+00**	**2E+00**	**2E-05**
		Based on NDs only	**2E+00**	**2E+00**	**2E-05**
		Based on Detects only	**6E-02**	**5E-02**	**1E-06**
		Site-related only	**3E-02**	**2E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0256H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.77E-01	3.92E-02	2.35E-02	5.24E-02	1.75E-02	1.0E-08		4E-10	2E-10	5E-10	2E-10	**1E-09**
TRICHLOROETHENE	79-01-6	6.16E-02	3.56E-03	2.14E-03	4.77E-03	1.59E-03	1.0E-06	kidney	4E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	6.16E-02	1.07E-03		3.18E-03		3.1E-06	NHL+liver	3E-09		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	1.48E-03	8.87E-04	1.98E-03	6.59E-04	4.4E-06		7E-09	4E-09	9E-09	3E-09	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0263H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	4.16E-02	3.53E-02	NA	---	---	4.72E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	2.22E+01	N	1.35E+01	1.14E+01	2.00E+00	**7E+00**	**6E+00**	1.53E+00	3.00E-05		**5E-05**
1,4-DIOXANE	123-91-1	3.61E-01	N	2.19E-01	1.86E-01	3.00E+01	**7E-03**	**6E-03**	2.49E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	4.95E-02	4.21E-02	2.00E-01	**2E-01**	**2E-01**	5.62E-03	1.60E-05		**9E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	1.41E+00	1.20E+00	2.00E+00	**7E-01**	**6E-01**	1.61E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.53E-01	Y	3.97E-01	3.37E-01	6.00E+01	**7E-03**	**6E-03**	4.50E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	4.68E-02	3.97E-02	9.00E+00	**5E-03**	**4E-03**	5.31E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	2.88E-01	Y	1.75E-01	1.49E-01	7.00E+00	**2E-02**	**2E-02**	1.99E-02	2.60E-05		**5E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	4.22E-02	3.59E-02	4.00E+00	**1E-02**	**9E-03**	4.79E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	2.98E-01	2.53E-01	6.00E+01	**5E-03**	**4E-03**	3.39E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.13E-02	Y	3.72E-02	3.16E-02	8.00E+02	**5E-05**	**4E-05**	4.23E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	1.24E+00	Y	7.53E-01	6.40E-01	3.00E+01	**3E-02**	**2E-02**	8.55E-02	7.80E-06		**7E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	3.16E-01	2.68E-01	1.00E+00	**3E-01**	**3E-01**	3.59E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	4.07E-01	3.46E-01	NA	---	---	4.62E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	3.88E+00	N	2.36E+00	2.00E+00	5.00E+00	**5E-01**	**4E-01**	2.68E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.94E-01	Y	3.61E-01	3.06E-01	1.00E+02	**4E-03**	**3E-03**	4.10E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	4.87E-02	N	2.95E-02	2.51E-02	9.77E+01	**3E-04**	**3E-04**	3.35E-03	2.30E-05		**8E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	6.63E-01	Y	4.03E-01	3.42E-01	1.00E+03	**4E-04**	**3E-04**	4.57E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	2.04E+00	1.74E+00	NA	---	---	2.32E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL	67-63-0	1.54E+01	N	9.32E+00	7.92E+00	2.00E+02	**5E-02**	**4E-02**	1.06E+00	-		**---**
M,P-XYLENE	108-38-3	1.63E+00	Y	9.90E-01	8.41E-01	1.00E+02	**1E-02**	**8E-03**	1.12E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.47E+00	N	2.11E+00	1.79E+00	6.00E+02	**4E-03**	**3E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.00E+00	8.51E-01	3.00E+00	**3E-01**	**3E-01**	1.14E-01	3.40E-05		**4E-06**
O-XYLENE	95-47-6	6.16E-01	Y	3.74E-01	3.18E-01	1.00E+02	**4E-03**	**3E-03**	4.25E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.26E+01	Y	7.65E+00	6.50E+00	4.00E+01	**2E-01**	**2E-01**	8.69E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	5.79E-01	Y	3.52E-01	2.99E-01	2.00E+00	**2E-01**	**1E-01**	M	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	3.52E-02	N	2.14E-02	1.82E-02	2.00E+02	**1E-04**	**9E-05**	2.43E-03	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	1.55E-02	1.32E-02	8.00E+01	**2E-04**	**2E-04**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0263H**	**Total Inhalation**	**9E+00**	**8E+00**	**6E-05**
		Based on NDs only	**9E+00**	**8E+00**	**6E-05**
		Based on Detects only	**4E-01**	**4E-01**	**2E-06**
		Site-related only	**4E-01**	**3E-01**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0263H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.47E+00	2.01E-01	1.20E-01	2.69E-01	8.95E-02	1.0E-08		2E-09	1E-09	3E-09	9E-10	**7E-09**
TRICHLOROETHENE	79-01-6	5.79E-01	3.35E-02	2.01E-02	4.48E-02	1.49E-02	1.0E-06	kidney	3E-08	2E-08	4E-08	1E-08	**1E-07**
TRICHLOROETHENE	79-01-6	5.79E-01	1.00E-02		2.99E-02		3.1E-06	NHL+liver	3E-08		9E-08		**1E-07**
VINYL CHLORIDE	75-01-4	2.56E-02	1.48E-03	8.87E-04	1.98E-03	6.59E-04	4.4E-06		7E-09	4E-09	9E-09	3E-09	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0273H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.15E-02	N	6.98E-03	5.93E-03	NA	---	---	7.93E-04	5.80E-05		**5E-08**
1,3-BUTADIENE	106-99-0	5.50E-02	N	3.34E-02	2.84E-02	2.00E+00	**2E-02**	**1E-02**	3.79E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	7.50E-02	N	4.55E-02	3.87E-02	3.00E+01	**2E-03**	**1E-03**	5.17E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	4.55E-03	3.87E-03	2.00E-01	**2E-02**	**2E-02**	5.17E-04	1.60E-05		**8E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	3.04E-01	2.58E-01	2.00E+00	**2E-01**	**1E-01**	3.45E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.90E-01	Y	3.58E-01	3.04E-01	6.00E+01	**6E-03**	**5E-03**	4.07E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.55E-02	N	2.16E-02	1.83E-02	9.00E+00	**2E-03**	**2E-03**	2.45E-03	6.00E-04		**1E-06**
1,2-DICHLOROETHANE	107-06-2	1.60E-01	Y	9.72E-02	8.26E-02	7.00E+00	**1E-02**	**1E-02**	1.10E-02	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	6.07E-02	5.16E-02	4.00E+00	**2E-02**	**1E-02**	6.89E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	2.10E-01	Y	1.28E-01	1.08E-01	6.00E+01	**2E-03**	**2E-03**	1.45E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	3.34E-02	2.84E-02	8.00E+02	**4E-05**	**4E-05**	3.79E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	4.50E-01	Y	2.73E-01	2.32E-01	3.00E+01	**9E-03**	**8E-03**	3.10E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	5.47E-02	4.64E-02	1.00E+00	**5E-02**	**5E-02**	6.21E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	1.35E-01	N	8.20E-02	6.97E-02	NA	---	---	9.31E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	4.25E-01	3.61E-01	5.00E+00	**9E-02**	**7E-02**	4.83E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	2.43E-01	2.06E-01	1.00E+02	**2E-03**	**2E-03**	2.76E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	5.30E-01	Y	3.22E-01	2.73E-01	9.77E+01	**3E-03**	**3E-03**	3.65E-02	2.30E-05		**8E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.50E-01	Y	9.11E-02	7.74E-02	1.00E+03	**9E-05**	**8E-05**	1.03E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	4.25E-01	3.61E-01	NA	---	---	4.83E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	2.30E+01	Y	1.40E+01	1.19E+01	2.00E+02	**7E-02**	**6E-02**	1.59E+00	-		**---**
M,P-XYLENE	108-38-3	5.10E-01	Y	3.10E-01	2.63E-01	1.00E+02	**3E-03**	**3E-03**	3.52E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	2.30E-01	N	1.40E-01	1.19E-01	6.00E+02	**2E-04**	**2E-04**	M	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.70E-01	Y	1.03E-01	8.77E-02	1.00E+02	**1E-03**	**9E-04**	1.17E-02	-		**---**
TETRACHLOROETHENE	127-18-4	2.70E+00	Y	1.64E+00	1.39E+00	4.00E+01	**4E-02**	**3E-02**	1.86E-01	2.60E-07		**5E-08**
TRICHLOROETHENE	79-01-6	1.75E-02	N	1.06E-02	9.03E-03	2.00E+00	**5E-03**	**5E-03**	M	4.10E-06	M	**7E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	8.50E-03	N	5.16E-03	4.39E-03	8.00E+01	**6E-05**	**5E-05**	M	4.40E-06	M	**7E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0273H**	**Total Inhalation**	**5E-01**	**4E-01**	**5E-06**
		Based on NDs only	**4E-01**	**3E-01**	**3E-06**
		Based on Detects only	**2E-01**	**1E-01**	**2E-06**
		Site-related only	**5E-02**	**4E-02**	**9E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0273H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.30E-01	1.33E-02	7.98E-03	1.78E-02	5.93E-03	1.0E-08		1E-10	8E-11	2E-10	6E-11	**5E-10**
TRICHLOROETHENE	79-01-6	1.75E-02	1.01E-03	6.07E-04	1.35E-03	4.51E-04	1.0E-06	kidney	1E-09	6E-10	1E-09	5E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.75E-02	3.04E-04		9.03E-04		3.1E-06	NHL+liver	9E-10		3E-09		**4E-09**
VINYL CHLORIDE	75-01-4	8.50E-03	4.92E-04	2.95E-04	6.58E-04	2.19E-04	4.4E-06		2E-09	1E-09	3E-09	1E-09	**7E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0274H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-02	N	1.46E-02	1.24E-02	NA	---	---	1.65E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	4.90E-02	N	2.98E-02	2.53E-02	2.00E+00	**1E-02**	**1E-02**	3.38E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	8.00E-02	N	4.86E-02	4.13E-02	3.00E+01	**2E-03**	**1E-03**	5.52E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	7.29E-03	6.19E-03	2.00E-01	**4E-02**	**3E-02**	8.27E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.95E-01	N	3.01E-01	2.55E-01	2.00E+00	**2E-01**	**1E-01**	3.41E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E-01	Y	9.72E-02	8.26E-02	6.00E+01	**2E-03**	**1E-03**	1.10E-02	-		---
1,2-DIBROMOETHANE	106-93-4	4.30E-02	N	2.61E-02	2.22E-02	9.00E+00	**3E-03**	**2E-03**	2.96E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	8.50E-02	7.22E-02	7.00E+00	**1E-02**	**1E-02**	9.65E-03	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	5.77E-02	4.90E-02	4.00E+00	**1E-02**	**1E-02**	6.55E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	8.00E-02	N	4.86E-02	4.13E-02	6.00E+01	**8E-04**	**7E-04**	5.52E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.55E-02	N	2.76E-02	2.35E-02	8.00E+02	**3E-05**	**3E-05**	3.14E-03	1.10E-05		**3E-08**
BENZENE	71-43-2	3.60E-01	Y	2.19E-01	1.86E-01	3.00E+01	**7E-03**	**6E-03**	2.48E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	6.38E-02	5.42E-02	1.00E+00	**6E-02**	**5E-02**	7.24E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	6.68E-02	5.68E-02	NA	---	---	7.58E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	6.00E-01	N	3.64E-01	3.10E-01	5.00E+00	**7E-02**	**6E-02**	4.14E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	2.49E-01	2.12E-01	1.00E+02	**2E-03**	**2E-03**	2.83E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	5.10E-01	Y	3.10E-01	2.63E-01	9.77E+01	**3E-03**	**3E-03**	3.52E-02	2.30E-05		**8E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.60E+00	Y	9.72E-01	8.26E-01	1.00E+03	**1E-03**	**8E-04**	1.10E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.10E-01	N	2.49E-01	2.12E-01	NA	---	---	2.83E-02	2.20E-05		**6E-07**
ISOPROPYL ALCOHOL	67-63-0	4.40E+01	Y	2.67E+01	2.27E+01	2.00E+02	**1E-01**	**1E-01**	3.03E+00	-		---
M,P-XYLENE	108-38-3	6.20E+00	Y	3.77E+00	3.20E+00	1.00E+02	**4E-02**	**3E-02**	4.27E-01	-		---
METHYLENE CHLORIDE	75-09-2	6.20E-01	Y	3.77E-01	3.20E-01	6.00E+02	**6E-04**	**5E-04**	M	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.40E+00	Y	8.50E-01	7.22E-01	1.00E+02	**9E-03**	**7E-03**	9.65E-02	-		---
TETRACHLOROETHENE	127-18-4	1.20E+01	Y	7.29E+00	6.19E+00	4.00E+01	**2E-01**	**2E-01**	8.27E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	3.50E-02	Y	2.13E-02	1.81E-02	2.00E+00	**1E-02**	**9E-03**	M	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	3.80E-03	N	2.31E-03	1.96E-03	8.00E+01	**3E-05**	**2E-05**	M	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0274H**	**Total Inhalation**	**8E-01**	**6E-01**	**5E-06**
		Based on NDs only	**4E-01**	**3E-01**	**3E-06**
		Based on Detects only	**4E-01**	**3E-01**	**2E-06**
		Site-related only	**2E-01**	**2E-01**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0274H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.20E-01	3.59E-02	2.15E-02	4.80E-02	1.60E-02	1.0E-08		4E-10	2E-10	5E-10	2E-10	**1E-09**
TRICHLOROETHENE	79-01-6	3.50E-02	2.02E-03	1.21E-03	2.71E-03	9.03E-04	1.0E-06	kidney	2E-09	1E-09	3E-09	9E-10	**7E-09**
TRICHLOROETHENE	79-01-6	3.50E-02	6.07E-04		1.81E-03		3.1E-06	NHL+liver	2E-09		6E-09		**7E-09**
VINYL CHLORIDE	75-01-4	3.80E-03	2.20E-04	1.32E-04	2.94E-04	9.80E-05	4.4E-06		1E-09	6E-10	1E-09	4E-10	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0277H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.15E-02	N	6.98E-03	5.93E-03	NA	---	---	7.93E-04	5.80E-05		**5E-08**
1,3-BUTADIENE	106-99-0	5.00E-02	N	3.04E-02	2.58E-02	2.00E+00	**2E-02**	**1E-02**	3.45E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	7.50E-02	N	4.55E-02	3.87E-02	3.00E+01	**2E-03**	**1E-03**	5.17E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	4.55E-03	3.87E-03	2.00E-01	**2E-02**	**2E-02**	5.17E-04	1.60E-05		**8E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	3.04E-01	2.58E-01	2.00E+00	**2E-01**	**1E-01**	3.45E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E-01	Y	7.29E-02	6.19E-02	6.00E+01	**1E-03**	**1E-03**	8.27E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.50E-02	N	2.13E-02	1.81E-02	9.00E+00	**2E-03**	**2E-03**	2.41E-03	6.00E-04		**1E-06**
1,2-DICHLOROETHANE	107-06-2	2.60E-01	Y	1.58E-01	1.34E-01	7.00E+00	**2E-02**	**2E-02**	1.79E-02	2.60E-05		**5E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	6.07E-02	5.16E-02	4.00E+00	**2E-02**	**1E-02**	6.89E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	6.50E-02	N	3.95E-02	3.35E-02	6.00E+01	**7E-04**	**6E-04**	4.48E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	3.34E-02	2.84E-02	8.00E+02	**4E-05**	**4E-05**	3.79E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	4.00E-01	Y	2.43E-01	2.06E-01	3.00E+01	**8E-03**	**7E-03**	2.76E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	5.47E-02	4.64E-02	1.00E+00	**5E-02**	**5E-02**	6.21E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	1.35E-01	N	8.20E-02	6.97E-02	NA	---	---	9.31E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	4.25E-01	3.61E-01	5.00E+00	**9E-02**	**7E-02**	4.83E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	2.43E-01	2.06E-01	1.00E+02	**2E-03**	**2E-03**	2.76E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	4.90E-01	Y	2.98E-01	2.53E-01	9.77E+01	**3E-03**	**3E-03**	3.38E-02	2.30E-05		**8E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.40E-01	Y	1.46E-01	1.24E-01	1.00E+03	**1E-04**	**1E-04**	1.65E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	4.25E-01	3.61E-01	NA	---	---	4.83E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	8.00E+00	Y	4.86E+00	4.13E+00	2.00E+02	**2E-02**	**2E-02**	5.52E-01	-		**---**
M,P-XYLENE	108-38-3	9.00E-01	Y	5.47E-01	4.64E-01	1.00E+02	**5E-03**	**5E-03**	6.21E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	3.40E+00	Y	2.06E+00	1.75E+00	6.00E+02	**3E-03**	**3E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.60E-01	Y	1.58E-01	1.34E-01	1.00E+02	**2E-03**	**1E-03**	1.79E-02	-		**---**
TETRACHLOROETHENE	127-18-4	5.00E+00	Y	3.04E+00	2.58E+00	4.00E+01	**8E-02**	**6E-02**	3.45E-01	2.60E-07		**9E-08**
TRICHLOROETHENE	79-01-6	1.75E-02	N	1.06E-02	9.03E-03	2.00E+00	**5E-03**	**5E-03**	M	4.10E-06	M	**7E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	8.50E-03	N	5.16E-03	4.39E-03	8.00E+01	**6E-05**	**5E-05**	M	4.40E-06	M	**7E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0277H**	**Total Inhalation**	**5E-01**	**4E-01**	**5E-06**
		Based on NDs only	**4E-01**	**3E-01**	**3E-06**
		Based on Detects only	**1E-01**	**1E-01**	**2E-06**
		Site-related only	**8E-02**	**7E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0277H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.40E+00	1.97E-01	1.18E-01	2.63E-01	8.77E-02	1.0E-08		2E-09	1E-09	3E-09	9E-10	**7E-09**
TRICHLOROETHENE	79-01-6	1.75E-02	1.01E-03	6.07E-04	1.35E-03	4.51E-04	1.0E-06	kidney	1E-09	6E-10	1E-09	5E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.75E-02	3.04E-04		9.03E-04		3.1E-06	NHL+liver	9E-10		3E-09		**4E-09**
VINYL CHLORIDE	75-01-4	8.50E-03	4.92E-04	2.95E-04	6.58E-04	2.19E-04	4.4E-06		2E-09	1E-09	3E-09	1E-09	**7E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0302H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00E-02	N	6.07E-03	5.16E-03	NA	---	---	6.89E-04	5.80E-05		**4E-08**
1,3-BUTADIENE	106-99-0	4.65E-02	N	2.82E-02	2.40E-02	2.00E+00	**1E-02**	**1E-02**	3.21E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	7.00E-02	N	4.25E-02	3.61E-02	3.00E+01	**1E-03**	**1E-03**	4.83E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	6.50E-03	N	3.95E-03	3.35E-03	2.00E-01	**2E-02**	**2E-02**	4.48E-04	1.60E-05		**7E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.55E-01	N	2.76E-01	2.35E-01	2.00E+00	**1E-01**	**1E-01**	3.14E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E-01	Y	9.72E-02	8.26E-02	6.00E+01	**2E-03**	**1E-03**	1.10E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.10E-02	N	1.88E-02	1.60E-02	9.00E+00	**2E-03**	**2E-03**	2.14E-03	6.00E-04		**1E-06**
1,2-DICHLOROETHANE	107-06-2	9.80E-02	Y	5.95E-02	5.06E-02	7.00E+00	**9E-03**	**7E-03**	6.76E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	8.50E-02	N	5.16E-02	4.39E-02	4.00E+00	**1E-02**	**1E-02**	5.86E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	5.50E-02	N	3.34E-02	2.84E-02	6.00E+01	**6E-04**	**5E-04**	3.79E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.90E-02	N	2.98E-02	2.53E-02	8.00E+02	**4E-05**	**3E-05**	3.38E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	4.80E-01	Y	2.91E-01	2.48E-01	3.00E+01	**1E-02**	**8E-03**	3.31E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	8.00E-02	N	4.86E-02	4.13E-02	1.00E+00	**5E-02**	**4E-02**	5.52E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	1.20E-01	N	7.29E-02	6.19E-02	NA	---	---	8.27E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	6.00E-01	N	3.64E-01	3.10E-01	5.00E+00	**7E-02**	**6E-02**	4.14E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.90E-01	Y	2.37E-01	2.01E-01	1.00E+02	**2E-03**	**2E-03**	2.69E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.70E-01	Y	2.25E-01	1.91E-01	9.77E+01	**2E-03**	**2E-03**	2.55E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.30E-01	Y	7.89E-02	6.71E-02	1.00E+03	**8E-05**	**7E-05**	8.96E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.00E-01	N	3.64E-01	3.10E-01	NA	---	---	4.14E-02	2.20E-05		**9E-07**
ISOPROPYL ALCOHOL	67-63-0	1.50E+01	Y	9.11E+00	7.74E+00	2.00E+02	**5E-02**	**4E-02**	1.03E+00	-		**---**
M,P-XYLENE	108-38-3	5.40E-01	Y	3.28E-01	2.79E-01	1.00E+02	**3E-03**	**3E-03**	3.72E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	2.50E-01	N	1.52E-01	1.29E-01	6.00E+02	**3E-04**	**2E-04**	M	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.70E-01	Y	1.64E-01	1.39E-01	1.00E+02	**2E-03**	**1E-03**	1.86E-02	-		**---**
TETRACHLOROETHENE	127-18-4	3.40E-01	Y	2.06E-01	1.75E-01	4.00E+01	**5E-03**	**4E-03**	2.34E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	1.55E-02	N	9.41E-03	8.00E-03	2.00E+00	**5E-03**	**4E-03**	M	4.10E-06	M	**6E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	7.50E-03	N	4.55E-03	3.87E-03	8.00E+01	**6E-05**	**5E-05**	M	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0302H**	**Total Inhalation**	**4E-01**	**3E-01**	**4E-06**
		Based on NDs only	**3E-01**	**3E-01**	**3E-06**
		Based on Detects only	**8E-02**	**7E-02**	**1E-06**
		Site-related only	**1E-02**	**1E-02**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0302H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.50E-01	1.45E-02	8.68E-03	1.93E-02	6.45E-03	1.0E-08		1E-10	9E-11	2E-10	6E-11	**5E-10**
TRICHLOROETHENE	79-01-6	1.55E-02	8.96E-04	5.38E-04	1.20E-03	4.00E-04	1.0E-06	kidney	9E-10	5E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.55E-02	2.69E-04		8.00E-04		3.1E-06	NHL+liver	8E-10		2E-09		**3E-09**
VINYL CHLORIDE	75-01-4	7.50E-03	4.34E-04	2.60E-04	5.80E-04	1.93E-04	4.4E-06		2E-09	1E-09	3E-09	9E-10	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0315H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	6.68E-03	5.68E-03	NA	---	---	7.58E-04	5.80E-05		**4E-08**
1,3-BUTADIENE	106-99-0	5.00E-02	N	3.04E-02	2.58E-02	2.00E+00	**2E-02**	**1E-02**	3.45E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	7.50E-02	N	4.55E-02	3.87E-02	3.00E+01	**2E-03**	**1E-03**	5.17E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	4.25E-03	3.61E-03	2.00E-01	**2E-02**	**2E-02**	4.83E-04	1.60E-05		**8E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	3.04E-01	2.58E-01	2.00E+00	**2E-01**	**1E-01**	3.45E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.50E-02	N	3.34E-02	2.84E-02	6.00E+01	**6E-04**	**5E-04**	3.79E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.45E-02	N	2.10E-02	1.78E-02	9.00E+00	**2E-03**	**2E-03**	2.38E-03	6.00E-04		**1E-06**
1,2-DICHLOROETHANE	107-06-2	1.30E-01	Y	7.89E-02	6.71E-02	7.00E+00	**1E-02**	**1E-02**	8.96E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	5.77E-02	4.90E-02	4.00E+00	**1E-02**	**1E-02**	6.55E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	3.64E-02	3.10E-02	6.00E+01	**6E-04**	**5E-04**	4.14E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	3.34E-02	2.84E-02	8.00E+02	**4E-05**	**4E-05**	3.79E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	4.30E-01	Y	2.61E-01	2.22E-01	3.00E+01	**9E-03**	**7E-03**	2.96E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	5.47E-02	4.64E-02	1.00E+00	**5E-02**	**5E-02**	6.21E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	7.89E-02	6.71E-02	NA	---	---	8.96E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	4.25E-01	3.61E-01	5.00E+00	**9E-02**	**7E-02**	4.83E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	2.43E-01	2.06E-01	1.00E+02	**2E-03**	**2E-03**	2.76E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.90E-01	Y	2.37E-01	2.01E-01	9.77E+01	**2E-03**	**2E-03**	2.69E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.40E-01	Y	8.50E-02	7.22E-02	1.00E+03	**9E-05**	**7E-05**	9.65E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	4.25E-01	3.61E-01	NA	---	---	4.83E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.70E+01	Y	1.03E+01	8.77E+00	2.00E+02	**5E-02**	**4E-02**	1.17E+00	-		**---**
M,P-XYLENE	108-38-3	4.40E-01	Y	2.67E-01	2.27E-01	1.00E+02	**3E-03**	**2E-03**	3.03E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	2.60E-01	N	1.58E-01	1.34E-01	6.00E+02	**3E-04**	**2E-04**	M	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.40E-01	Y	8.50E-02	7.22E-02	1.00E+02	**9E-04**	**7E-04**	9.65E-03	-		**---**
TETRACHLOROETHENE	127-18-4	2.30E+00	Y	1.40E+00	1.19E+00	4.00E+01	**3E-02**	**3E-02**	1.59E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	1.76E-01	1.50E-01	2.00E+00	**9E-02**	**7E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	8.50E-03	N	5.16E-03	4.39E-03	8.00E+01	**6E-05**	**5E-05**	M	4.40E-06	M	**7E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0315H**	**Total Inhalation**	**6E-01**	**5E-01**	**5E-06**
		Based on NDs only	**3E-01**	**3E-01**	**3E-06**
		Based on Detects only	**2E-01**	**2E-01**	**1E-06**
		Site-related only	**1E-01**	**1E-01**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0315H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.60E-01	1.50E-02	9.02E-03	2.01E-02	6.71E-03	1.0E-08		2E-10	9E-11	2E-10	7E-11	**5E-10**
TRICHLOROETHENE	79-01-6	2.90E-01	1.68E-02	1.01E-02	2.24E-02	7.48E-03	1.0E-06	kidney	2E-08	1E-08	2E-08	7E-09	**6E-08**
TRICHLOROETHENE	79-01-6	2.90E-01	5.03E-03		1.50E-02		3.1E-06	NHL+liver	2E-08		5E-08		**6E-08**
VINYL CHLORIDE	75-01-4	8.50E-03	4.92E-04	2.95E-04	6.58E-04	2.19E-04	4.4E-06		2E-09	1E-09	3E-09	1E-09	**7E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0329H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-02	N	1.46E-02	1.24E-02	NA	---	---	1.65E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	4.90E-02	N	2.98E-02	2.53E-02	2.00E+00	**1E-02**	**1E-02**	3.38E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	8.00E-02	N	4.86E-02	4.13E-02	3.00E+01	**2E-03**	**1E-03**	5.52E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	7.29E-03	6.19E-03	2.00E-01	**4E-02**	**3E-02**	8.27E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.95E-01	N	3.01E-01	2.55E-01	2.00E+00	**2E-01**	**1E-01**	3.41E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.40E-01	Y	2.06E-01	1.75E-01	6.00E+01	**3E-03**	**3E-03**	2.34E-02	-		---
1,2-DIBROMOETHANE	106-93-4	4.30E-02	N	2.61E-02	2.22E-02	9.00E+00	**3E-03**	**2E-03**	2.96E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	7.20E-02	Y	4.37E-02	3.72E-02	7.00E+00	**6E-03**	**5E-03**	4.96E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	5.77E-02	4.90E-02	4.00E+00	**1E-02**	**1E-02**	6.55E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	8.00E-02	N	4.86E-02	4.13E-02	6.00E+01	**8E-04**	**7E-04**	5.52E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.55E-02	N	2.76E-02	2.35E-02	8.00E+02	**3E-05**	**3E-05**	3.14E-03	1.10E-05		**3E-08**
BENZENE	71-43-2	3.80E-01	Y	2.31E-01	1.96E-01	3.00E+01	**8E-03**	**7E-03**	2.62E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	6.38E-02	5.42E-02	1.00E+00	**6E-02**	**5E-02**	7.24E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	6.68E-02	5.68E-02	NA	---	---	7.58E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	6.00E-01	N	3.64E-01	3.10E-01	5.00E+00	**7E-02**	**6E-02**	4.14E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	2.55E-01	2.17E-01	1.00E+02	**3E-03**	**2E-03**	2.90E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	7.60E-02	Y	4.62E-02	3.92E-02	9.77E+01	**5E-04**	**4E-04**	5.24E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.60E-01	Y	1.58E-01	1.34E-01	1.00E+03	**2E-04**	**1E-04**	1.79E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.10E-01	N	2.49E-01	2.12E-01	NA	---	---	2.83E-02	2.20E-05		**6E-07**
ISOPROPYL ALCOHOL	67-63-0	1.10E+01	Y	6.68E+00	5.68E+00	2.00E+02	**3E-02**	**3E-02**	7.58E-01	-		---
M,P-XYLENE	108-38-3	1.10E+00	Y	6.68E-01	5.68E-01	1.00E+02	**7E-03**	**6E-03**	7.58E-02	-		---
METHYLENE CHLORIDE	75-09-2	4.90E-01	Y	2.98E-01	2.53E-01	6.00E+02	**5E-04**	**4E-04**	M	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	4.10E-01	Y	2.49E-01	2.12E-01	1.00E+02	**2E-03**	**2E-03**	2.83E-02	-		---
TETRACHLOROETHENE	127-18-4	9.20E-02	Y	5.59E-02	4.75E-02	4.00E+01	**1E-03**	**1E-03**	6.34E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	8.00E-03	N	4.86E-03	4.13E-03	2.00E+00	**2E-03**	**2E-03**	M	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	3.80E-03	N	2.31E-03	1.96E-03	8.00E+01	**3E-05**	**2E-05**	M	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0329H**	**Total Inhalation**	**4E-01**	**4E-01**	**4E-06**
		Based on NDs only	**4E-01**	**3E-01**	**3E-06**
		Based on Detects only	**7E-02**	**6E-02**	**7E-07**
		Site-related only	**5E-03**	**5E-03**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0329H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.90E-01	2.83E-02	1.70E-02	3.79E-02	1.26E-02	1.0E-08		3E-10	2E-10	4E-10	1E-10	**1E-09**
TRICHLOROETHENE	79-01-6	8.00E-03	4.63E-04	2.78E-04	6.19E-04	2.06E-04	1.0E-06	kidney	5E-10	3E-10	6E-10	2E-10	**2E-09**
TRICHLOROETHENE	79-01-6	8.00E-03	1.39E-04		4.13E-04		3.1E-06	NHL+liver	4E-10		1E-09		**2E-09**
VINYL CHLORIDE	75-01-4	3.80E-03	2.20E-04	1.32E-04	2.94E-04	9.80E-05	4.4E-06		1E-09	6E-10	1E-09	4E-10	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0334H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	4.16E-02	3.53E-02	NA	---	---	4.72E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	2.22E+00	N	1.35E+00	1.14E+00	2.00E+00	**7E-01**	**6E-01**	1.53E-01	3.00E-05		**5E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	2.19E-01	1.86E-01	3.00E+01	**7E-03**	**6E-03**	2.49E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	4.95E-02	4.21E-02	2.00E-01	**2E-01**	**2E-01**	5.62E-03	1.60E-05		**9E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	1.41E+00	1.20E+00	2.00E+00	**7E-01**	**6E-01**	1.61E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	2.98E-01	2.53E-01	6.00E+01	**5E-03**	**4E-03**	3.39E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	4.68E-02	3.97E-02	9.00E+00	**5E-03**	**4E-03**	5.31E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	9.92E-02	Y	6.02E-02	5.12E-02	7.00E+00	**9E-03**	**7E-03**	6.84E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	4.22E-02	3.59E-02	4.00E+00	**1E-02**	**9E-03**	4.79E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	2.98E-01	2.53E-01	6.00E+01	**5E-03**	**4E-03**	3.39E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.42E-02	Y	5.11E-02	4.34E-02	8.00E+02	**6E-05**	**5E-05**	5.81E-03	1.10E-05		**6E-08**
BENZENE	71-43-2	5.78E-01	Y	3.51E-01	2.98E-01	3.00E+01	**1E-02**	**1E-02**	3.99E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	3.16E-01	2.68E-01	1.00E+00	**3E-01**	**3E-01**	3.59E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	4.07E-01	3.46E-01	NA	---	---	4.62E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	2.36E-01	2.00E-01	5.00E+00	**5E-02**	**4E-02**	2.68E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.40E-01	Y	3.28E-01	2.79E-01	1.00E+02	**3E-03**	**3E-03**	3.72E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.67E+00	Y	1.01E+00	8.62E-01	9.77E+01	**1E-02**	**9E-03**	1.15E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.71E-01	Y	1.65E-01	1.40E-01	1.00E+03	**2E-04**	**1E-04**	1.87E-02	2.50E-06		**5E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	2.04E+00	1.74E+00	NA	---	---	2.32E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL	67-63-0	7.94E+00	Y	4.82E+00	4.10E+00	2.00E+02	**2E-02**	**2E-02**	5.47E-01	-		**---**
M,P-XYLENE	108-38-3	8.45E-01	Y	5.13E-01	4.36E-01	1.00E+02	**5E-03**	**4E-03**	5.83E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	6.49E-01	Y	3.94E-01	3.35E-01	6.00E+02	**7E-04**	**6E-04**	M	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.00E+00	8.51E-01	3.00E+00	**3E-01**	**3E-01**	1.14E-01	3.40E-05		**4E-06**
O-XYLENE	95-47-6	4.34E-01	N	2.63E-01	2.24E-01	1.00E+02	**3E-03**	**2E-03**	2.99E-02	-		**---**
TETRACHLOROETHENE	127-18-4	9.64E-02	Y	5.85E-02	4.97E-02	4.00E+01	**1E-03**	**1E-03**	6.65E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	5.35E-02	N	3.25E-02	2.76E-02	2.00E+00	**2E-02**	**1E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	2.14E-02	1.82E-02	2.00E+02	**1E-04**	**9E-05**	2.43E-03	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	1.55E-02	1.32E-02	8.00E+01	**2E-04**	**2E-04**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0334H**	**Total Inhalation**	**2E+00**	**2E+00**	**2E-05**
		Based on NDs only	**2E+00**	**2E+00**	**2E-05**
		Based on Detects only	**7E-02**	**6E-02**	**3E-06**
		Site-related only	**3E-02**	**2E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0334H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.49E-01	3.75E-02	2.25E-02	5.02E-02	1.67E-02	1.0E-08		4E-10	2E-10	5E-10	2E-10	**1E-09**
TRICHLOROETHENE	79-01-6	5.35E-02	3.09E-03	1.86E-03	4.14E-03	1.38E-03	1.0E-06	kidney	3E-09	2E-09	4E-09	1E-09	**1E-08**
TRICHLOROETHENE	79-01-6	5.35E-02	9.28E-04		2.76E-03		3.1E-06	NHL+liver	3E-09		9E-09		**1E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	1.48E-03	8.87E-04	1.98E-03	6.59E-04	4.4E-06		7E-09	4E-09	9E-09	3E-09	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0336H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-02	N	1.46E-02	1.24E-02	NA	---	---	1.65E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	4.90E-02	N	2.98E-02	2.53E-02	2.00E+00	**1E-02**	**1E-02**	3.38E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	8.00E-02	N	4.86E-02	4.13E-02	3.00E+01	**2E-03**	**1E-03**	5.52E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.15E-02	N	6.98E-03	5.93E-03	2.00E-01	**3E-02**	**3E-02**	7.93E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.90E-01	N	2.98E-01	2.53E-01	2.00E+00	**1E-01**	**1E-01**	3.38E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	2.20E-01	Y	1.34E-01	1.14E-01	6.00E+01	**2E-03**	**2E-03**	1.52E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.25E-02	N	2.58E-02	2.19E-02	9.00E+00	**3E-03**	**2E-03**	2.93E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	4.68E-02	3.97E-02	7.00E+00	**7E-03**	**6E-03**	5.31E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	5.77E-02	4.90E-02	4.00E+00	**1E-02**	**1E-02**	6.55E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	8.00E-02	N	4.86E-02	4.13E-02	6.00E+01	**8E-04**	**7E-04**	5.52E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.50E-02	N	2.73E-02	2.32E-02	8.00E+02	**3E-05**	**3E-05**	3.10E-03	1.10E-05		**3E-08**
BENZENE	71-43-2	5.50E-01	Y	3.34E-01	2.84E-01	3.00E+01	**1E-02**	**9E-03**	3.79E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	6.38E-02	5.42E-02	1.00E+00	**6E-02**	**5E-02**	7.24E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	6.68E-02	5.68E-02	NA	---	---	7.58E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	5.50E-01	N	3.34E-01	2.84E-01	5.00E+00	**7E-02**	**6E-02**	3.79E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	2.55E-01	2.17E-01	1.00E+02	**3E-03**	**2E-03**	2.90E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.10E-01	Y	1.88E-01	1.60E-01	9.77E+01	**2E-03**	**2E-03**	2.14E-02	2.30E-05		**5E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.10E-01	Y	1.28E-01	1.08E-01	1.00E+03	**1E-04**	**1E-04**	1.45E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.05E-01	N	2.46E-01	2.09E-01	NA	---	---	2.79E-02	2.20E-05		**6E-07**
ISOPROPYL ALCOHOL	67-63-0	1.90E+01	Y	1.15E+01	9.80E+00	2.00E+02	**6E-02**	**5E-02**	1.31E+00	-		**---**
M,P-XYLENE	108-38-3	6.90E-01	Y	4.19E-01	3.56E-01	1.00E+02	**4E-03**	**4E-03**	4.76E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	5.00E-01	Y	3.04E-01	2.58E-01	6.00E+02	**5E-04**	**4E-04**	M	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.30E-01	Y	1.40E-01	1.19E-01	1.00E+02	**1E-03**	**1E-03**	1.59E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.60E+01	Y	9.72E+00	8.26E+00	4.00E+01	**2E-01**	**2E-01**	1.10E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	1.80E-02	Y	1.09E-02	9.29E-03	2.00E+00	**5E-03**	**5E-03**	M	4.10E-06	M	**7E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	3.80E-03	N	2.31E-03	1.96E-03	8.00E+01	**3E-05**	**2E-05**	M	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0336H**	**Total Inhalation**	**7E-01**	**6E-01**	**5E-06**
		Based on NDs only	**3E-01**	**3E-01**	**3E-06**
		Based on Detects only	**3E-01**	**3E-01**	**1E-06**
		Site-related only	**3E-01**	**2E-01**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0336H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.00E-01	2.89E-02	1.74E-02	3.87E-02	1.29E-02	1.0E-08		3E-10	2E-10	4E-10	1E-10	**1E-09**
TRICHLOROETHENE	79-01-6	1.80E-02	1.04E-03	6.25E-04	1.39E-03	4.64E-04	1.0E-06	kidney	1E-09	6E-10	1E-09	5E-10	**4E-09**
TRICHLOROETHENE	79-01-6	1.80E-02	3.12E-04		9.29E-04		3.1E-06	NHL+liver	1E-09		3E-09		**4E-09**
VINYL CHLORIDE	75-01-4	3.80E-03	2.20E-04	1.32E-04	2.94E-04	9.80E-05	4.4E-06		1E-09	6E-10	1E-09	4E-10	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0347H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.55E-02	N	1.55E-02	1.32E-02	NA	---	---	1.76E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	5.00E-02	N	3.04E-02	2.58E-02	2.00E+00	**2E-02**	**1E-02**	3.45E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	8.50E-02	N	5.16E-02	4.39E-02	3.00E+01	**2E-03**	**1E-03**	5.86E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.25E-02	N	7.59E-03	6.45E-03	2.00E-01	**4E-02**	**3E-02**	8.62E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	3.04E-01	2.58E-01	2.00E+00	**2E-01**	**1E-01**	3.45E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.30E-01	Y	2.61E-01	2.22E-01	6.00E+01	**4E-03**	**4E-03**	2.96E-02	-		---
1,2-DIBROMOETHANE	106-93-4	4.55E-02	N	2.76E-02	2.35E-02	9.00E+00	**3E-03**	**3E-03**	3.14E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	1.20E+00	Y	7.29E-01	6.19E-01	7.00E+00	**1E-01**	**9E-02**	8.27E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	6.07E-02	5.16E-02	4.00E+00	**2E-02**	**1E-02**	6.89E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	8.50E-02	N	5.16E-02	4.39E-02	6.00E+01	**9E-04**	**7E-04**	5.86E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.80E-02	N	2.91E-02	2.48E-02	8.00E+02	**4E-05**	**3E-05**	3.31E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	4.90E-01	Y	2.98E-01	2.53E-01	3.00E+01	**1E-02**	**8E-03**	3.38E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	1.15E-01	N	6.98E-02	5.93E-02	1.00E+00	**7E-02**	**6E-02**	7.93E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.15E-01	N	6.98E-02	5.93E-02	NA	---	---	7.93E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	6.00E-01	N	3.64E-01	3.10E-01	5.00E+00	**7E-02**	**6E-02**	4.14E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	2.55E-01	2.17E-01	1.00E+02	**3E-03**	**2E-03**	2.90E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.00E+00	Y	6.07E-01	5.16E-01	9.77E+01	**6E-03**	**5E-03**	6.89E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	6.30E-01	Y	3.83E-01	3.25E-01	1.00E+03	**4E-04**	**3E-04**	4.34E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.35E-01	N	2.64E-01	2.24E-01	NA	---	---	3.00E-02	2.20E-05		**7E-07**
ISOPROPYL ALCOHOL	67-63-0	1.50E+01	Y	9.11E+00	7.74E+00	2.00E+02	**5E-02**	**4E-02**	1.03E+00	-		---
M,P-XYLENE	108-38-3	2.00E+00	Y	1.21E+00	1.03E+00	1.00E+02	**1E-02**	**1E-02**	1.38E-01	-		---
METHYLENE CHLORIDE	75-09-2	5.00E-01	Y	3.04E-01	2.58E-01	6.00E+02	**5E-04**	**4E-04**	M	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	6.40E-01	Y	3.89E-01	3.30E-01	1.00E+02	**4E-03**	**3E-03**	4.41E-02	-		---
TETRACHLOROETHENE	127-18-4	9.00E-02	Y	5.47E-02	4.64E-02	4.00E+01	**1E-03**	**1E-03**	6.21E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	2.70E-02	Y	1.64E-02	1.39E-02	2.00E+00	**8E-03**	**7E-03**	M	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	4.05E-03	N	2.46E-03	2.09E-03	8.00E+01	**3E-05**	**3E-05**	M	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0347H**	**Total Inhalation**	**6E-01**	**5E-01**	**8E-06**
		Based on NDs only	**4E-01**	**3E-01**	**4E-06**
		Based on Detects only	**2E-01**	**2E-01**	**4E-06**
		Site-related only	**1E-02**	**1E-02**	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0347H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.00E-01	2.89E-02	1.74E-02	3.87E-02	1.29E-02	1.0E-08		3E-10	2E-10	4E-10	1E-10	**1E-09**
TRICHLOROETHENE	79-01-6	2.70E-02	1.56E-03	9.37E-04	2.09E-03	6.97E-04	1.0E-06	kidney	2E-09	9E-10	2E-09	7E-10	**5E-09**
TRICHLOROETHENE	79-01-6	2.70E-02	4.68E-04		1.39E-03		3.1E-06	NHL+liver	1E-09		4E-09		**6E-09**
VINYL CHLORIDE	75-01-4	4.05E-03	2.34E-04	1.41E-04	3.13E-04	1.04E-04	4.4E-06		1E-09	6E-10	1E-09	5E-10	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0381H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.15E-02	N	6.98E-03	5.93E-03	NA	---	---	7.93E-04	5.80E-05		**5E-08**
1,3-BUTADIENE	106-99-0	5.50E-02	N	3.34E-02	2.84E-02	2.00E+00	**2E-02**	**1E-02**	3.79E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	4.30E-01	Y	2.61E-01	2.22E-01	3.00E+01	**9E-03**	**7E-03**	2.96E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	4.55E-03	3.87E-03	2.00E-01	**2E-02**	**2E-02**	5.17E-04	1.60E-05		**8E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.50E-01	N	3.34E-01	2.84E-01	2.00E+00	**2E-01**	**1E-01**	3.79E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	2.10E-01	Y	1.28E-01	1.08E-01	6.00E+01	**2E-03**	**2E-03**	1.45E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.65E-02	N	2.22E-02	1.88E-02	9.00E+00	**2E-03**	**2E-03**	2.52E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	6.68E-02	5.68E-02	7.00E+00	**1E-02**	**8E-03**	7.58E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	6.07E-02	5.16E-02	4.00E+00	**2E-02**	**1E-02**	6.89E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	6.50E-02	N	3.95E-02	3.35E-02	6.00E+01	**7E-04**	**6E-04**	4.48E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	3.34E-02	2.84E-02	8.00E+02	**4E-05**	**4E-05**	3.79E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	7.60E-01	Y	4.62E-01	3.92E-01	3.00E+01	**2E-02**	**1E-02**	5.24E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	9.50E-02	N	5.77E-02	4.90E-02	1.00E+00	**6E-02**	**5E-02**	6.55E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	1.40E-01	N	8.50E-02	7.22E-02	NA	---	---	9.65E-03	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	4.25E-01	3.61E-01	5.00E+00	**9E-02**	**7E-02**	4.83E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	2.49E-01	2.12E-01	1.00E+02	**2E-03**	**2E-03**	2.83E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	9.60E-01	Y	5.83E-01	4.95E-01	9.77E+01	**6E-03**	**5E-03**	6.62E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.40E+00	Y	1.46E+00	1.24E+00	1.00E+03	**1E-03**	**1E-03**	1.65E-01	2.50E-06		**4E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	4.25E-01	3.61E-01	NA	**---**	**---**	4.83E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	2.40E+01	Y	1.46E+01	1.24E+01	2.00E+02	**7E-02**	**6E-02**	1.65E+00	-		**---**
M,P-XYLENE	108-38-3	1.00E+01	Y	6.07E+00	5.16E+00	1.00E+02	**6E-02**	**5E-02**	6.89E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	2.80E-01	N	1.70E-01	1.44E-01	6.00E+02	**3E-04**	**2E-04**	M	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.70E+00	Y	1.64E+00	1.39E+00	1.00E+02	**2E-02**	**1E-02**	1.86E-01	-		**---**
TETRACHLOROETHENE	127-18-4	6.20E-02	Y	3.77E-02	3.20E-02	4.00E+01	**9E-04**	**8E-04**	4.27E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	1.80E-02	N	1.09E-02	9.29E-03	2.00E+00	**5E-03**	**5E-03**	M	4.10E-06	M	**7E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	9.00E-03	N	5.47E-03	4.64E-03	8.00E+01	**7E-05**	**6E-05**	M	4.40E-06	M	**8E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0381H**	**Total Inhalation**	**6E-01**	**5E-01**	**6E-06**
		Based on NDs only	**4E-01**	**3E-01**	**4E-06**
		Based on Detects only	**2E-01**	**2E-01**	**3E-06**
		Site-related only	**2E-02**	**1E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0381H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.80E-01	1.62E-02	9.72E-03	2.17E-02	7.22E-03	1.0E-08		2E-10	1E-10	2E-10	7E-11	**5E-10**
TRICHLOROETHENE	79-01-6	1.80E-02	1.04E-03	6.25E-04	1.39E-03	4.64E-04	1.0E-06	kidney	1E-09	6E-10	1E-09	5E-10	**4E-09**
TRICHLOROETHENE	79-01-6	1.80E-02	3.12E-04		9.29E-04		3.1E-06	NHL+liver	1E-09		3E-09		**4E-09**
VINYL CHLORIDE	75-01-4	9.00E-03	5.21E-04	3.12E-04	6.97E-04	2.32E-04	4.4E-06		2E-09	1E-09	3E-09	1E-09	**8E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0392H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.30E-02	N	1.40E-02	1.19E-02	NA	---	---	1.59E-03	5.80E-05		**9E-08**
1,3-BUTADIENE	106-99-0	1.10E-01	N	6.68E-02	5.68E-02	2.00E+00	**3E-02**	**3E-02**	7.58E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	1.55E-01	N	9.41E-02	8.00E-02	3.00E+01	**3E-03**	**3E-03**	1.07E-02	5.00E-06		**5E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.50E-02	N	9.11E-03	7.74E-03	2.00E-01	**5E-02**	**4E-02**	1.03E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.05E+00	N	6.38E-01	5.42E-01	2.00E+00	**3E-01**	**3E-01**	7.24E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.60E-01	Y	2.79E-01	2.37E-01	6.00E+01	**5E-03**	**4E-03**	3.17E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	4.25E-02	3.61E-02	9.00E+00	**5E-03**	**4E-03**	4.83E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	8.40E-02	Y	5.10E-02	4.33E-02	7.00E+00	**7E-03**	**6E-03**	5.79E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	2.00E-01	N	1.21E-01	1.03E-01	4.00E+00	**3E-02**	**3E-02**	1.38E-02	3.70E-06		**5E-08**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	7.89E-02	6.71E-02	6.00E+01	**1E-03**	**1E-03**	8.96E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.10E-01	N	6.68E-02	5.68E-02	8.00E+02	**8E-05**	**7E-05**	7.58E-03	1.10E-05		**8E-08**
BENZENE	71-43-2	6.30E-01	Y	3.83E-01	3.25E-01	3.00E+01	**1E-02**	**1E-02**	4.34E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	1.85E-01	N	1.12E-01	9.55E-02	1.00E+00	**1E-01**	**1E-01**	1.28E-02	4.90E-05		**6E-07**
BROMODICHLOROMETHANE	75-27-4	2.75E-01	N	1.67E-01	1.42E-01	NA	---	---	1.90E-02	3.70E-05		**7E-07**
BROMOMETHANE	74-83-9	1.45E+00	N	8.81E-01	7.48E-01	5.00E+00	**2E-01**	**1E-01**	1.00E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	2.31E-01	1.96E-01	1.00E+02	**2E-03**	**2E-03**	2.62E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	2.70E-01	Y	1.64E-01	1.39E-01	9.77E+01	**2E-03**	**1E-03**	1.86E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	3.00E-01	Y	1.82E-01	1.55E-01	1.00E+03	**2E-04**	**2E-04**	2.07E-02	2.50E-06		**5E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.40E+00	N	8.50E-01	7.22E-01	NA	---	---	9.65E-02	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	2.60E+01	Y	1.58E+01	1.34E+01	2.00E+02	**8E-02**	**7E-02**	1.79E+00	-		**---**
M,P-XYLENE	108-38-3	1.20E+00	Y	7.29E-01	6.19E-01	1.00E+02	**7E-03**	**6E-03**	8.27E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	3.10E-01	N	1.88E-01	1.60E-01	6.00E+02	**3E-04**	**3E-04**	M	1.00E-08	M	**6E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	5.20E-01	Y	3.16E-01	2.68E-01	1.00E+02	**3E-03**	**3E-03**	3.59E-02	-		**---**
TETRACHLOROETHENE	127-18-4	7.40E-02	Y	4.49E-02	3.82E-02	4.00E+01	**1E-03**	**1E-03**	5.10E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	3.60E-02	N	2.19E-02	1.86E-02	2.00E+00	**1E-02**	**9E-03**	M	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	1.75E-02	N	1.06E-02	9.03E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0392H**	**Total Inhalation**	**9E-01**	**7E-01**	**8E-06**
		Based on NDs only	**7E-01**	**6E-01**	**7E-06**
		Based on Detects only	**1E-01**	**1E-01**	**1E-06**
		Site-related only	**2E-02**	**1E-02**	**8E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0392H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.10E-01	1.79E-02	1.08E-02	2.40E-02	8.00E-03	1.0E-08		2E-10	1E-10	2E-10	8E-11	**6E-10**
TRICHLOROETHENE	79-01-6	3.60E-02	2.08E-03	1.25E-03	2.79E-03	9.29E-04	1.0E-06	kidney	2E-09	1E-09	3E-09	9E-10	**7E-09**
TRICHLOROETHENE	79-01-6	3.60E-02	6.25E-04		1.86E-03		3.1E-06	NHL+liver	2E-09		6E-09		**8E-09**
VINYL CHLORIDE	75-01-4	1.75E-02	1.01E-03	6.07E-04	1.35E-03	4.51E-04	4.4E-06		4E-09	3E-09	6E-09	2E-09	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0395H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	4.16E-02	3.53E-02	NA	---	---	4.72E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	2.22E+00	N	1.35E+00	1.14E+00	2.00E+00	**7E-01**	**6E-01**	1.53E-01	3.00E-05		**5E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	2.19E-01	1.86E-01	3.00E+01	**7E-03**	**6E-03**	2.49E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	4.95E-02	4.21E-02	2.00E-01	**2E-01**	**2E-01**	5.62E-03	1.60E-05		**9E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	1.41E+00	1.20E+00	2.00E+00	**7E-01**	**6E-01**	1.61E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	2.98E-01	2.53E-01	6.00E+01	**5E-03**	**4E-03**	3.39E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	4.68E-02	3.97E-02	9.00E+00	**5E-03**	**4E-03**	5.31E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	1.60E-01	Y	9.72E-02	8.26E-02	7.00E+00	**1E-02**	**1E-02**	1.10E-02	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	4.22E-02	3.59E-02	4.00E+00	**1E-02**	**9E-03**	4.79E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	2.98E-01	2.53E-01	6.00E+01	**5E-03**	**4E-03**	3.39E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.13E-02	Y	3.72E-02	3.16E-02	8.00E+02	**5E-05**	**4E-05**	4.23E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	5.27E-01	Y	3.20E-01	2.72E-01	3.00E+01	**1E-02**	**9E-03**	3.63E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	3.16E-01	2.68E-01	1.00E+00	**3E-01**	**3E-01**	3.59E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	4.07E-01	3.46E-01	NA	---	---	4.62E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	2.36E-01	2.00E-01	5.00E+00	**5E-02**	**4E-02**	2.68E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	6.08E-01	Y	3.69E-01	3.14E-01	1.00E+02	**4E-03**	**3E-03**	4.19E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	5.31E-01	Y	3.22E-01	2.74E-01	9.77E+01	**3E-03**	**3E-03**	3.66E-02	2.30E-05		**8E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.43E-01	Y	1.48E-01	1.25E-01	1.00E+03	**1E-04**	**1E-04**	1.68E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	2.04E+00	1.74E+00	NA	---	---	2.32E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL	67-63-0	3.52E+01	Y	2.14E+01	1.82E+01	2.00E+02	**1E-01**	**9E-02**	2.43E+00	-		**---**
M,P-XYLENE	108-38-3	8.65E-01	N	5.25E-01	4.46E-01	1.00E+02	**5E-03**	**4E-03**	5.96E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	6.91E-01	Y	4.20E-01	3.57E-01	6.00E+02	**7E-04**	**6E-04**	M	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.00E+00	8.51E-01	3.00E+00	**3E-01**	**3E-01**	1.14E-01	3.40E-05		**4E-06**
O-XYLENE	95-47-6	4.34E-01	N	2.63E-01	2.24E-01	1.00E+02	**3E-03**	**2E-03**	2.99E-02	-		**---**
TETRACHLOROETHENE	127-18-4	2.70E-01	Y	1.64E-01	1.39E-01	4.00E+01	**4E-03**	**3E-03**	1.86E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.17E-01	Y	1.32E-01	1.12E-01	2.00E+00	**7E-02**	**6E-02**	M	4.10E-06	M	**9E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	2.14E-02	1.82E-02	2.00E+02	**1E-04**	**9E-05**	2.43E-03	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	1.55E-02	1.32E-02	8.00E+01	**2E-04**	**2E-04**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0395H**	**Total Inhalation**	**3E+00**	**2E+00**	**2E-05**
		Based on NDs only	**2E+00**	**2E+00**	**2E-05**
		Based on Detects only	**2E-01**	**2E-01**	**2E-06**
		Site-related only	**8E-02**	**7E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0395H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.91E-01	4.00E-02	2.40E-02	5.35E-02	1.78E-02	1.0E-08		4E-10	2E-10	5E-10	2E-10	**1E-09**
TRICHLOROETHENE	79-01-6	2.17E-01	1.26E-02	7.53E-03	1.68E-02	5.60E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	6E-09	**4E-08**
TRICHLOROETHENE	79-01-6	2.17E-01	3.77E-03		1.12E-02		3.1E-06	NHL+liver	1E-08		3E-08		**5E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	1.48E-03	8.87E-04	1.98E-03	6.59E-04	4.4E-06		7E-09	4E-09	9E-09	3E-09	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**B20-I**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.07E-01	5.16E-01		TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	6.68E-03	5.68E-03	NA	---	---	7.58E-04	5.80E-05		**4E-08**
1,3-BUTADIENE	106-99-0	8.40E-01	Y	5.10E-01	4.33E-01	2.00E+00	**3E-01**	**2E-01**	5.79E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	7.50E-02	N	4.55E-02	3.87E-02	3.00E+01	**2E-03**	**1E-03**	5.17E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	4.25E-03	3.61E-03	2.00E-01	**2E-02**	**2E-02**	4.83E-04	1.60E-05		**8E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	3.04E-01	2.58E-01	2.00E+00	**2E-01**	**1E-01**	3.45E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E-01	Y	7.29E-02	6.19E-02	6.00E+01	**1E-03**	**1E-03**	8.27E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.40E-02	N	2.06E-02	1.75E-02	9.00E+00	**2E-03**	**2E-03**	2.34E-03	6.00E-04		**1E-06**
1,2-DICHLOROETHANE	107-06-2	9.40E-02	Y	5.71E-02	4.85E-02	7.00E+00	**8E-03**	**7E-03**	6.48E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	5.77E-02	4.90E-02	4.00E+00	**1E-02**	**1E-02**	6.55E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	3.64E-02	3.10E-02	6.00E+01	**6E-04**	**5E-04**	4.14E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	3.10E-01	Y	1.88E-01	1.60E-01	8.00E+02	**2E-04**	**2E-04**	2.14E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	5.20E-01	Y	3.16E-01	2.68E-01	3.00E+01	**1E-02**	**9E-03**	3.59E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	5.47E-02	4.64E-02	1.00E+00	**5E-02**	**5E-02**	6.21E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	7.89E-02	6.71E-02	NA	---	---	8.96E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	4.25E-01	3.61E-01	5.00E+00	**9E-02**	**7E-02**	4.83E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.90E-01	Y	2.37E-01	2.01E-01	1.00E+02	**2E-03**	**2E-03**	2.69E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.30E-01	Y	2.00E-01	1.70E-01	9.77E+01	**2E-03**	**2E-03**	2.28E-02	2.30E-05		**5E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.40E-01	Y	8.50E-02	7.22E-02	1.00E+03	**9E-05**	**7E-05**	9.65E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	3.95E-01	3.35E-01	NA	---	---	4.48E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.30E+01	Y	7.89E+00	6.71E+00	2.00E+02	**4E-02**	**3E-02**	8.96E-01	-		**---**
M,P-XYLENE	108-38-3	4.00E-01	Y	2.43E-01	2.06E-01	1.00E+02	**2E-03**	**2E-03**	2.76E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	2.95E-01	N	1.79E-01	1.52E-01	6.00E+02	**3E-04**	**3E-04**	M	1.00E-08	M	**6E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.40E-01	Y	8.50E-02	7.22E-02	1.00E+02	**9E-04**	**7E-04**	9.65E-03	-		**---**
TETRACHLOROETHENE	127-18-4	1.40E-01	Y	8.50E-02	7.22E-02	4.00E+01	**2E-03**	**2E-03**	9.65E-03	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	2.70E-01	N	1.64E-01	1.39E-01	2.00E+00	**8E-02**	**7E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	8.50E-03	N	5.16E-03	4.39E-03	8.00E+01	**6E-05**	**5E-05**	M	4.40E-06	M	**7E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**B20-I**	**Total Inhalation**	**7E-01**	**6E-01**	**6E-06**
		Based on NDs only	**4E-01**	**4E-01**	**3E-06**
		Based on Detects only	**3E-01**	**3E-01**	**3E-06**
		Site-related only	**9E-02**	**7E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**B20-I**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.95E-01	1.71E-02	1.02E-02	2.28E-02	7.61E-03	1.0E-08		2E-10	1E-10	2E-10	8E-11	**6E-10**
TRICHLOROETHENE	79-01-6	2.70E-01	1.56E-02	9.37E-03	2.09E-02	6.97E-03	1.0E-06	kidney	2E-08	9E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	2.70E-01	4.68E-03		1.39E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	8.50E-03	4.92E-04	2.95E-04	6.58E-04	2.19E-04	4.4E-06		2E-09	1E-09	3E-09	1E-09	**7E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**B32**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	6.07E-01	5.16E-01	TWFc (unitless)	6.89E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.20E-02	N	7.29E-03	6.19E-03	NA	---	---	8.27E-04	5.80E-05		**5E-08**
1,3-BUTADIENE	106-99-0	5.50E-02	N	3.34E-02	2.84E-02	2.00E+00	**2E-02**	**1E-02**	3.79E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	8.00E-02	N	4.86E-02	4.13E-02	3.00E+01	**2E-03**	**1E-03**	5.52E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.00E-03	N	4.86E-03	4.13E-03	2.00E-01	**2E-02**	**2E-02**	5.52E-04	1.60E-05		**9E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.50E-01	N	3.34E-01	2.84E-01	2.00E+00	**2E-01**	**1E-01**	3.79E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E-01	Y	8.50E-02	7.22E-02	6.00E+01	**1E-03**	**1E-03**	9.65E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.80E-02	N	2.31E-02	1.96E-02	9.00E+00	**3E-03**	**2E-03**	2.62E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	3.30E-01	Y	2.00E-01	1.70E-01	7.00E+00	**3E-02**	**2E-02**	2.28E-02	2.60E-05		**6E-07**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	6.38E-02	5.42E-02	4.00E+00	**2E-02**	**1E-02**	7.24E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	7.00E-02	N	4.25E-02	3.61E-02	6.00E+01	**7E-04**	**6E-04**	4.83E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	3.64E-02	3.10E-02	8.00E+02	**5E-05**	**4E-05**	4.14E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	4.00E-01	Y	2.43E-01	2.06E-01	3.00E+01	**8E-03**	**7E-03**	2.76E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	1.00E-01	N	6.07E-02	5.16E-02	1.00E+00	**6E-02**	**5E-02**	6.89E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	1.45E-01	N	8.81E-02	7.48E-02	NA	---	---	1.00E-02	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	7.50E-01	N	4.55E-01	3.87E-01	5.00E+00	**9E-02**	**8E-02**	5.17E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	2.43E-01	2.06E-01	1.00E+02	**2E-03**	**2E-03**	2.76E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	4.80E-01	Y	2.91E-01	2.48E-01	9.77E+01	**3E-03**	**3E-03**	3.31E-02	2.30E-05		**8E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.20E-01	Y	7.29E-02	6.19E-02	1.00E+03	**7E-05**	**6E-05**	8.27E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	4.55E-01	3.87E-01	NA	**---**	**---**	5.17E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	5.30E+01	Y	3.22E+01	2.73E+01	2.00E+02	**2E-01**	**1E-01**	3.65E+00	-		**---**
M,P-XYLENE	108-38-3	3.90E-01	Y	2.37E-01	2.01E-01	1.00E+02	**2E-03**	**2E-03**	2.69E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	3.60E-01	N	2.19E-01	1.86E-01	6.00E+02	**4E-04**	**3E-04**	M	1.00E-08	M	**7E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.60E-01	Y	9.72E-02	8.26E-02	1.00E+02	**1E-03**	**8E-04**	1.10E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.80E-02	Y	2.91E-02	2.48E-02	4.00E+01	**7E-04**	**6E-04**	3.31E-03	2.60E-07		**9E-10**
TRICHLOROETHENE	79-01-6	1.90E-02	N	1.15E-02	9.80E-03	2.00E+00	**6E-03**	**5E-03**	M	4.10E-06	M	**8E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	9.50E-03	N	5.77E-03	4.90E-03	8.00E+01	**7E-05**	**6E-05**	M	4.40E-06	M	**8E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**B32**	**Total Inhalation**	**6E-01**	**5E-01**	**5E-06**
		Based on NDs only	**4E-01**	**3E-01**	**4E-06**
		Based on Detects only	**2E-01**	**2E-01**	**2E-06**
		Site-related only	**8E-03**	**7E-03**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**B32**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	1.74E-02	5.16E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.60E-01	2.08E-02	1.25E-02	2.79E-02	9.29E-03	1.0E-08		2E-10	1E-10	3E-10	9E-11	**7E-10**
TRICHLOROETHENE	79-01-6	1.90E-02	1.10E-03	6.59E-04	1.47E-03	4.90E-04	1.0E-06	kidney	1E-09	7E-10	1E-09	5E-10	**4E-09**
TRICHLOROETHENE	79-01-6	1.90E-02	3.30E-04		9.80E-04		3.1E-06	NHL+liver	1E-09		3E-09		**4E-09**
VINYL CHLORIDE	75-01-4	9.50E-03	5.49E-04	3.30E-04	7.35E-04	2.45E-04	4.4E-06		2E-09	1E-09	3E-09	1E-09	**8E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Students**
Exposure Area:	**0045S**

Pathway:
Inhalation of Indoor Air

		CTE primary	CTE secondary			CTE lifetime
	TWFnc (unitless)	1.03E-01	1.23E-01		TWFc (unitless)	2.08E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	2.50E-01	N	2.57E-02	3.08E-02	7.00E+00	**4E-03**	**4E-03**	5.21E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	4.00E+01	Y	4.11E+00	4.93E+00	4.00E+01	**1E-01**	**1E-01**	8.34E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	1.30E+00	Y	1.34E-01	1.60E-01	2.00E+00	**7E-02**	**8E-02**	2.71E-02	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	5.30E-01	Y	5.45E-02	6.53E-02	8.00E+01	**7E-04**	**8E-04**	1.10E-02	4.40E-06	M	**2E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Students	**0045S**	**Total Inhalation**	**2E-01**	**2E-01**	**7E-07**
		Based on NDs only	**4E-03**	**4E-03**	**1E-07**
		Based on Detects only	**2E-01**	**2E-01**	**6E-07**
		Site-related only	**2E-01**	**2E-01**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Students**
Exposure Area:	**0045S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE primary	CTE secondary
TWFc (unitless)	1.03E-02	1.06E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.30E+00	4.45E-02	2.67E-02	2.06E-02	6.87E-03	1.0E-06	kidney	4E-08	3E-08	2E-08	7E-09	**1E-07**
TRICHLOROETHENE	79-01-6	1.30E+00	1.34E-02		1.37E-02		3.1E-06	NHL+liver	4E-08		4E-08		**8E-08**
VINYL CHLORIDE	75-01-4	5.30E-01	1.82E-02	1.09E-02	8.40E-03	2.80E-03	4.4E-06		8E-08	5E-08	4E-08	1E-08	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Students**
Exposure Area:	**365S**

Pathway:
Inhalation of Indoor Air

	CTE primary	CTE secondary		CTE lifetime
TWFnc (unitless)	1.03E-01	1.23E-01	TWFc (unitless)	2.08E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.30E-02	N	1.34E-03	1.60E-03	NA	---	---	2.71E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	6.00E-02	N	6.16E-03	7.40E-03	2.00E+00	**3E-03**	**4E-03**	1.25E-03	3.00E-05		**4E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	9.25E-03	1.11E-02	3.00E+01	**3E-04**	**4E-04**	1.88E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	8.50E-03	N	8.73E-04	1.05E-03	2.00E-01	**4E-03**	**5E-03**	1.77E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	6.16E-02	7.40E-02	2.00E+00	**3E-02**	**4E-02**	1.25E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	2.20E-01	Y	2.26E-02	2.71E-02	6.00E+01	**4E-04**	**5E-04**	4.59E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.05E-02	N	4.16E-03	4.99E-03	9.00E+00	**5E-04**	**6E-04**	8.44E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	1.13E-02	1.36E-02	7.00E+00	**2E-03**	**2E-03**	2.29E-03	2.60E-05		**6E-08**
1,2-DICHLOROPROPANE	78-87-5	1.10E-01	N	1.13E-02	1.36E-02	4.00E+00	**3E-03**	**3E-03**	2.29E-03	3.70E-06		**8E-09**
1,3,5-Trimethylbenzene	108-67-8	7.00E-02	N	7.19E-03	8.63E-03	6.00E+01	**1E-04**	**1E-04**	1.46E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.50E-02	N	6.68E-03	8.01E-03	8.00E+02	**8E-06**	**1E-05**	1.35E-03	1.10E-05		**1E-08**
BENZENE	71-43-2	4.60E-01	Y	4.73E-02	5.67E-02	3.00E+01	**2E-03**	**2E-03**	9.59E-03	7.80E-06		**7E-08**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	1.08E-02	1.29E-02	1.00E+00	**1E-02**	**1E-02**	2.19E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	1.55E-01	N	1.59E-02	1.91E-02	NA	---	---	3.23E-03	3.70E-05		**1E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	8.22E-02	9.86E-02	5.00E+00	**2E-02**	**2E-02**	1.67E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	3.90E-02	4.68E-02	1.00E+02	**4E-04**	**5E-04**	7.92E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	1.00E-01	Y	1.03E-02	1.23E-02	9.77E+01	**1E-04**	**1E-04**	2.08E-03	2.30E-05		**5E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	5.30E-01	Y	5.45E-02	6.53E-02	1.00E+03	**5E-05**	**7E-05**	1.10E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	8.22E-02	9.86E-02	NA	---	---	1.67E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	6.90E+01	Y	7.09E+00	8.51E+00	2.00E+02	**4E-02**	**4E-02**	1.44E+00	-		**---**
M,P-XYLENE	108-38-3	1.90E+00	Y	1.95E-01	2.34E-01	1.00E+02	**2E-03**	**2E-03**	3.96E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	6.00E-01	Y	6.16E-02	7.40E-02	6.00E+02	**1E-04**	**1E-04**	1.25E-02	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	6.10E-01	Y	6.27E-02	7.52E-02	1.00E+02	**6E-04**	**8E-04**	1.27E-02	-		**---**
TETRACHLOROETHENE	127-18-4	3.10E-01	Y	3.18E-02	3.82E-02	4.00E+01	**8E-04**	**1E-03**	6.46E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	2.00E-02	N	2.05E-03	2.47E-03	2.00E+00	**1E-03**	**1E-03**	4.17E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	1.00E-02	N	1.03E-03	1.23E-03	8.00E+01	**1E-05**	**2E-05**	2.08E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Students	**365S**	**Total Inhalation**	**1E-01**	**1E-01**	**1E-06**
		Based on NDs only	**7E-02**	**8E-02**	**1E-06**
		Based on Detects only	**4E-02**	**5E-02**	**3E-07**
		Site-related only	**2E-03**	**3E-03**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Students**
Exposure Area:	**365S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE primary	CTE secondary
TWFc (unitless)	1.03E-02	1.06E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.00E-01	2.05E-02	1.23E-02	9.51E-03	3.17E-03	1.0E-08		2E-10	1E-10	1E-10	3E-11	**5E-10**
TRICHLOROETHENE	79-01-6	2.00E-02	6.85E-04	4.11E-04	3.17E-04	1.06E-04	1.0E-06	kidney	7E-10	4E-10	3E-10	1E-10	**2E-09**
TRICHLOROETHENE	79-01-6	2.00E-02	2.05E-04		2.11E-04		3.1E-06	NHL+liver	6E-10		7E-10		**1E-09**
VINYL CHLORIDE	75-01-4	1.00E-02	3.42E-04	2.05E-04	1.59E-04	5.28E-05	4.4E-06		2E-09	9E-10	7E-10	2E-10	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0001H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.03E-01	NA	---	---	9.81E-03	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.32E-02	2.00E+00	---	**2E-02**	3.16E-03	3.00E-05		**9E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	1.80E-02	3.00E+01	---	**6E-04**	1.72E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.11E-01	2.00E+00	---	**2E-01**	2.97E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	---	1.50E-01	6.00E+01	---	**3E-03**	1.43E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	1.30E+00	Y	---	2.60E-01	7.00E+00	---	**4E-02**	2.48E-02	2.60E-05		**6E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	---	1.50E-01	6.00E+01	---	**3E-03**	1.43E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	---	1.80E-01	8.00E+02	---	**2E-04**	1.72E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	6.50E-01	Y	---	1.30E-01	3.00E+01	---	**4E-03**	1.24E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	1.91E-01	1.00E+00	---	**2E-01**	1.83E-02	4.90E-05		**9E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.00E-01	NA	---	---	9.58E-03	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	---	5.82E-02	5.00E+00	---	**1E-02**	5.55E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	1.10E+00	Y	---	2.20E-01	1.00E+02	---	**2E-03**	2.10E-02	6.00E-06		**1E-07**
CHLOROFORM	67-66-3	1.30E+00	Y	---	2.60E-01	9.77E+01	---	**3E-03**	2.48E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	2.10E+01	Y	---	4.20E+00	7.00E+01	---	**6E-02**	4.01E-01	-		**---**
ETHYLBENZENE	100-41-4	2.52E+00	Y	---	5.03E-01	1.00E+03	---	**5E-04**	4.80E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.20E-01	NA	---	---	3.05E-02	2.20E-05		**7E-07**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
M,P-XYLENE	108-38-3	9.55E+00	Y	---	1.91E+00	1.00E+02	---	**2E-02**	1.82E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	1.94E+00	Y	---	3.89E-01	6.00E+02	---	**6E-04**	3.71E-02	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.43E+00	Y	---	4.86E-01	1.00E+02	---	**5E-03**	4.63E-02	-		**---**
TETRACHLOROETHENE	127-18-4	5.15E+00	Y	---	1.03E+00	4.00E+01	---	**3E-02**	9.82E-02	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	4.77E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	---	7.04E-02	2.00E+02	---	**4E-04**	6.71E-03	-		**---**
VINYL CHLORIDE	75-01-4	1.74E-01	Y	---	3.47E-02	8.00E+01	---	**4E-04**	3.31E-03	4.40E-06	M	**1E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0001H**	**Total Inhalation**	**---**	**1E+00**	**1E-05**
		Based on NDs only	**0E+00**	**8E-01**	**1E-05**
		Based on Detects only	**#VALUE!**	**2E-01**	**2E-06**
		Site-related only	**0E+00**	**5E-02**	**7E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0001H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.94E+00	NA	NA	NA	3.71E-02	1.0E-08		---	---	---	4E-10	**4E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	4.77E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		4.77E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	1.74E-01	NA	NA	NA	3.31E-03	4.4E-06		---	---	---	1E-08	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0002H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.03E-01	NA	---	---	9.81E-03	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.32E-02	2.00E+00	---	**2E-02**	3.16E-03	3.00E-05		**9E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	1.80E-02	3.00E+01	---	**6E-04**	1.72E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.11E-01	2.00E+00	---	**2E-01**	2.97E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	---	1.50E-01	6.00E+01	---	**3E-03**	1.43E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	---	6.10E-02	7.00E+00	---	**9E-03**	5.82E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	---	1.50E-01	6.00E+01	---	**3E-03**	1.43E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	---	1.80E-01	8.00E+02	---	**2E-04**	1.72E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	5.50E-01	Y	---	1.10E-01	3.00E+01	---	**4E-03**	1.05E-02	7.80E-06		**8E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	1.91E-01	1.00E+00	---	**2E-01**	1.83E-02	4.90E-05		**9E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.00E-01	NA	---	---	9.58E-03	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	---	5.82E-02	5.00E+00	---	**1E-02**	5.55E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	9.43E-02	1.00E+02	---	**9E-04**	8.99E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	1.32E+00	Y	---	2.63E-01	9.77E+01	---	**3E-03**	2.51E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	1.84E+01	Y	---	3.67E+00	7.00E+01	---	**5E-02**	3.50E-01	-		---
ETHYLBENZENE	100-41-4	7.38E-01	Y	---	1.48E-01	1.00E+03	---	**1E-04**	1.41E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.20E-01	NA	---	---	3.05E-02	2.20E-05		**7E-07**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	5.40E+00	Y	---	1.08E+00	1.00E+02	---	**1E-02**	1.03E-01	-		---
METHYLENE CHLORIDE	75-09-2	8.68E+00	Y	---	1.74E+00	6.00E+02	---	**3E-03**	1.66E-01	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	9.70E-01	Y	---	1.94E-01	1.00E+02	---	**2E-03**	1.85E-02	-		---
TETRACHLOROETHENE	127-18-4	1.42E+00	Y	---	2.85E-01	4.00E+01	---	**7E-03**	2.71E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	---	5.80E-02	2.00E+00	---	**3E-02**	5.53E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	---	7.04E-02	2.00E+02	---	**4E-04**	6.71E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.30E-02	8.00E+01	---	**2E-04**	1.24E-03	4.40E-06	M	**5E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0002H**	**Total Inhalation**	---	**9E-01**	**1E-05**
		Based on NDs only	**0E+00**	**8E-01**	**1E-05**
		Based on Detects only	**#VALUE!**	**1E-01**	**7E-07**
		Site-related only	**0E+00**	**4E-02**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0002H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.68E+00	NA	NA	NA	1.66E-01	1.0E-08		---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	2.90E-01	NA	NA	NA	5.53E-03	1.0E-06	kidney	---	---	---	6E-09	**6E-09**
TRICHLOROETHENE	79-01-6	2.90E-01	NA		5.53E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	1.24E-03	4.4E-06		---	---	---	5E-09	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0003H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	3.30E+00	Y	---	6.60E-01	NA	---	---	6.29E-02	5.80E-05		**4E-06**
1,3-BUTADIENE	106-99-0	2.90E-01	Y	---	5.80E-02	2.00E+00	---	**3E-02**	5.53E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	2.95E-01	N	---	5.90E-02	3.00E+01	---	**2E-03**	5.63E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	---	2.22E-01	2.00E+00	---	**1E-01**	2.12E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	2.60E+01	Y	---	5.21E+00	6.00E+01	---	**9E-02**	4.97E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	2.00E-01	Y	---	4.00E-02	7.00E+00	---	**6E-03**	3.81E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	7.90E+00	Y	---	1.58E+00	6.00E+01	---	**3E-02**	1.51E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	---	9.01E-02	8.00E+02	---	**1E-04**	8.59E-03	1.10E-05		**9E-08**
BENZENE	71-43-2	2.20E+01	Y	---	4.41E+00	3.00E+01	---	**1E-01**	4.20E-01	7.80E-06		**3E-06**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	---	1.60E-01	1.00E+00	---	**2E-01**	1.53E-02	4.90E-05		**7E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.00E-01	NA	---	---	9.58E-03	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	5.00E-01	N	---	1.00E-01	5.00E+00	---	**2E-02**	9.54E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	6.30E-01	Y	---	1.26E-01	1.00E+02	---	**1E-03**	1.20E-02	6.00E-06		**7E-08**
CHLOROFORM	67-66-3	4.73E+01	Y	---	9.47E+00	9.77E+01	---	**1E-01**	9.03E-01	2.30E-05		**2E-05**
ETHYL ACETATE	141-78-6	1.44E+01	Y	---	2.88E+00	7.00E+01	---	**4E-02**	2.75E-01	-		**---**
ETHYLBENZENE	100-41-4	1.30E+01	Y	---	2.60E+00	1.00E+03	---	**3E-03**	2.48E-01	2.50E-06		**6E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.20E-01	NA	---	---	3.05E-02	2.20E-05		**7E-07**
ISOPROPYL ALCOHOL	67-63-0	2.60E+01	Y	---	5.20E+00	2.00E+02	---	**3E-02**	4.96E-01	-		**---**
M,P-XYLENE	108-38-3	6.95E+01	Y	---	1.39E+01	1.00E+02	---	**1E-01**	1.33E+00	-		**---**
METHYLENE CHLORIDE	75-09-2	9.50E-01	Y	---	1.90E-01	6.00E+02	---	**3E-04**	1.81E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	7.00E-02	Y	---	1.40E-02	3.00E+00	---	**5E-03**	1.34E-03	3.40E-05		**5E-08**
O-XYLENE	95-47-6	2.20E+01	Y	---	4.40E+00	1.00E+02	---	**4E-02**	4.20E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.70E+01	Y	---	3.40E+00	4.00E+01	---	**9E-02**	3.24E-01	2.60E-07		**8E-08**
TRICHLOROETHENE	79-01-6	4.10E-02	Y	---	8.20E-03	2.00E+00	---	**4E-03**	7.82E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	2.65E-01	N	---	5.30E-02	2.00E+02	---	**3E-04**	5.05E-03	-		**---**
VINYL CHLORIDE	75-01-4	1.92E-01	N	---	3.83E-02	8.00E+01	---	**5E-04**	3.65E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0003H**	**Total Inhalation**	**---**	**1E+00**	**4E-05**
		Based on NDs only	**0E+00**	**7E-01**	**9E-06**
		Based on Detects only	**#VALUE!**	**7E-01**	**3E-05**
		Site-related only	**0E+00**	**9E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0003H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.50E-01	NA	NA	NA	1.81E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	4.10E-02	NA	NA	NA	7.82E-04	1.0E-06	kidney	---	---	---	8E-10	**8E-10**
TRICHLOROETHENE	79-01-6	4.10E-02	NA		7.82E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	1.92E-01	NA	NA	NA	3.65E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0004H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.03E-01	NA	---	---	9.81E-03	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.32E-02	2.00E+00	---	**2E-02**	3.16E-03	3.00E-05		**9E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	1.80E-02	3.00E+01	---	**6E-04**	1.72E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.11E-01	2.00E+00	---	**2E-01**	2.97E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	---	1.50E-01	6.00E+01	---	**3E-03**	1.43E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	---	6.10E-02	7.00E+00	---	**9E-03**	5.82E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	---	1.50E-01	6.00E+01	---	**3E-03**	1.43E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	---	1.80E-01	8.00E+02	---	**2E-04**	1.72E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	6.71E-01	Y	---	1.34E-01	3.00E+01	---	**4E-03**	1.28E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	1.91E-01	1.00E+00	---	**2E-01**	1.83E-02	4.90E-05		**9E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.00E-01	NA	---	---	9.58E-03	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	---	5.82E-02	5.00E+00	---	**1E-02**	5.55E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	9.43E-02	1.00E+02	---	**9E-04**	8.99E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	8.50E-01	Y	---	1.70E-01	9.77E+01	---	**2E-03**	1.62E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	1.60E+00	Y	---	3.20E-01	7.00E+01	---	**5E-03**	3.05E-02	-		**---**
ETHYLBENZENE	100-41-4	3.25E-01	N	---	6.51E-02	1.00E+03	---	**7E-05**	6.21E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.20E-01	NA	---	---	3.05E-02	2.20E-05		**7E-07**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
M,P-XYLENE	108-38-3	9.99E-01	Y	---	2.00E-01	1.00E+02	---	**2E-03**	1.90E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	2.10E+00	Y	---	4.20E-01	6.00E+02	---	**7E-04**	4.01E-02	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	3.25E-01	N	---	6.51E-02	1.00E+02	---	**7E-04**	6.21E-03	-		**---**
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	6.68E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	4.77E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	---	7.04E-02	2.00E+02	---	**4E-04**	6.71E-03	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.30E-02	8.00E+01	---	**2E-04**	1.24E-03	4.40E-06	M	**5E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0004H**	**Total Inhalation**	**---**	**9E-01**	**1E-05**
		Based on NDs only	**0E+00**	**9E-01**	**1E-05**
		Based on Detects only	**#VALUE!**	**1E-02**	**5E-07**
		Site-related only	**0E+00**	**3E-02**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0004H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.10E+00	NA	NA	NA	4.01E-02	1.0E-08		---	---	---	4E-10	**4E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	4.77E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		4.77E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	1.24E-03	4.4E-06		---	---	---	5E-09	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0008H**

Pathway:
Inhalation of Indoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.03E-01	NA	---	---	9.81E-03	5.80E-05	**6E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.32E-02	2.00E+00	---	**2E-02**	3.16E-03	3.00E-05	**9E-08**
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05	**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	---	2.22E-01	2.00E+00	---	**1E-01**	2.12E-02	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.70E+01	Y	---	5.40E+00	6.00E+01	---	**9E-02**	5.15E-01	-	---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04	**7E-06**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	---	6.10E-02	7.00E+00	---	**9E-03**	5.82E-03	2.60E-05	**2E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06	**3E-08**
1,3,5-Trimethylbenzene	108-67-8	8.84E+00	Y	---	1.77E+00	6.00E+01	---	**3E-02**	1.69E-01	-	---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	---	9.01E-02	8.00E+02	---	**1E-04**	8.59E-03	1.10E-05	**9E-08**
BENZENE	71-43-2	3.51E+01	Y	---	7.02E+00	3.00E+01	---	**2E-01**	6.70E-01	7.80E-06	**5E-06**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	---	1.60E-01	1.00E+00	---	**2E-01**	1.53E-02	4.90E-05	**7E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.00E-01	NA	---	---	9.58E-03	3.70E-05	**4E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	---	5.82E-02	5.00E+00	---	**1E-02**	5.55E-03	-	---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	9.43E-02	1.00E+02	---	**9E-04**	8.99E-03	6.00E-06	**5E-08**
CHLOROFORM	67-66-3	3.66E-01	N	---	7.32E-02	9.77E+01	---	**7E-04**	6.98E-03	2.30E-05	**2E-07**
ETHYL ACETATE	141-78-6	2.10E+00	Y	---	4.20E-01	7.00E+01	---	**6E-03**	4.01E-02	-	---
ETHYLBENZENE	100-41-4	2.73E+01	Y	---	5.47E+00	1.00E+03	---	**5E-03**	5.21E-01	2.50E-06	**1E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.20E-01	NA	---	---	3.05E-02	2.20E-05	**7E-07**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	1.22E+02	Y	---	2.43E+01	1.00E+02	---	**2E-01**	2.32E+00	-	---
METHYLENE CHLORIDE	75-09-2	8.00E-01	Y	---	1.60E-01	6.00E+02	---	**3E-04**	1.53E-02	1.00E-08	M **2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	4.04E+01	Y	---	8.07E+00	1.00E+02	---	**8E-02**	7.70E-01	-	---
TETRACHLOROETHENE	127-18-4	2.91E+00	Y	---	5.83E-01	4.00E+01	---	**1E-02**	5.56E-02	2.60E-07	**1E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	N	---	8.10E-02	2.00E+00	---	**4E-02**	7.72E-03	4.10E-06	M **3E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	---	5.30E-02	2.00E+02	---	**3E-04**	5.05E-03	-	---
VINYL CHLORIDE	75-01-4	1.92E-01	N	---	3.83E-02	8.00E+01	---	**5E-04**	3.65E-03	4.40E-06	M **2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0008H**	**Total Inhalation**	---	**1E+00**	**2E-05**
		Based on NDs only	**0E+00**	**8E-01**	**1E-05**
		Based on Detects only	**#VALUE!**	**7E-01**	**7E-06**
		Site-related only	**0E+00**	**6E-02**	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0008H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.00E-01	NA	NA	NA	1.53E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	4.05E-01	NA	NA	NA	7.72E-03	1.0E-06	kidney	---	---	---	8E-09	**8E-09**
TRICHLOROETHENE	79-01-6	4.05E-01	NA		7.72E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	1.92E-01	NA	NA	NA	3.65E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0011H**

Pathway:
Inhalation of Indoor Air

			CTE child	CTE adult			CTE lifetime			
		TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.03E-01	NA	---	---	9.81E-03	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	1.40E-01	Y	---	2.80E-02	2.00E+00	---	**1E-02**	2.67E-03	3.00E-05		**8E-08**
1,4-DIOXANE	123-91-1	1.70E-01	Y	---	3.40E-02	3.00E+01	---	**1E-03**	3.24E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.45E+00	N	---	2.90E-01	2.00E+00	---	**1E-01**	2.77E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	3.60E-01	Y	---	7.20E-02	6.00E+01	---	**1E-03**	6.87E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	1.20E-01	Y	---	2.40E-02	7.00E+00	---	**3E-03**	2.29E-03	2.60E-05		**6E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	---	7.40E-02	6.00E+01	---	**1E-03**	7.06E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	---	9.01E-02	8.00E+02	---	**1E-04**	8.59E-03	1.10E-05		**9E-08**
BENZENE	71-43-2	8.60E-01	Y	---	1.72E-01	3.00E+01	---	**6E-03**	1.64E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	---	2.20E-02	1.00E+00	---	**2E-02**	2.10E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.00E-01	NA	---	---	9.58E-03	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	3.70E-01	N	---	7.40E-02	5.00E+00	---	**1E-02**	7.06E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	---	9.20E-02	1.00E+02	---	**9E-04**	8.77E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	5.50E-01	Y	---	1.10E-01	9.77E+01	---	**1E-03**	1.05E-02	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	1.62E+00	Y	---	3.24E-01	7.00E+01	---	**5E-03**	3.09E-02	-		**---**
ETHYLBENZENE	100-41-4	4.70E-01	Y	---	9.40E-02	1.00E+03	---	**9E-05**	8.96E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.95E+00	N	---	3.90E-01	NA	---	---	3.72E-02	2.20E-05		**8E-07**
ISOPROPYL ALCOHOL	67-63-0	5.90E+00	Y	---	1.18E+00	2.00E+02	---	**6E-03**	1.13E-01	-		**---**
M,P-XYLENE	108-38-3	1.20E+00	Y	---	2.40E-01	1.00E+02	---	**2E-03**	2.29E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	3.82E+00	Y	---	7.64E-01	6.00E+02	---	**1E-03**	7.28E-02	1.00E-08	M	**7E-10**
NAPHTHALENE	91-20-3	4.65E-02	N	---	9.30E-03	3.00E+00	---	**3E-03**	8.87E-04	3.40E-05		**3E-08**
O-XYLENE	95-47-6	4.50E-01	Y	---	9.00E-02	1.00E+02	---	**9E-04**	8.58E-03	-		**---**
TETRACHLOROETHENE	127-18-4	1.90E+01	Y	---	3.80E+00	4.00E+01	---	**1E-01**	3.62E-01	2.60E-07		**9E-08**
TRICHLOROETHENE	79-01-6	5.80E-02	Y	---	1.16E-02	2.00E+00	---	**6E-03**	1.11E-03	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	2.65E-01	N	---	5.30E-02	2.00E+02	---	**3E-04**	5.05E-03	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.30E-02	8.00E+01	---	**2E-04**	1.24E-03	4.40E-06	M	**5E-09**

			HI$_{child}$	**HI$_{adult}$**	**Risk$_{lifetime}$**
Indoor Worker	**0011H**	**Total Inhalation**	**---**	**8E-01**	**1E-05**
		Based on NDs only	**0E+00**	**6E-01**	**9E-06**
		Based on Detects only	**#VALUE!**	**1E-01**	**7E-07**
		Site-related only	**0E+00**	**1E-01**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0011H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.82E+00	NA	NA	NA	7.28E-02	1.0E-08		---	---	---	7E-10	**7E-10**
TRICHLOROETHENE	79-01-6	5.80E-02	NA	NA	NA	1.11E-03	1.0E-06	kidney	---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	5.80E-02	NA		1.11E-03		3.1E-06	NHL+liver	---		3E-09		**3E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	1.24E-03	4.4E-06		---	---	---	5E-09	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0012H**

Pathway:
Inhalation of Indoor Air

			CTE child	CTE adult			CTE lifetime			
		TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.03E-01	NA	---	---	9.81E-03	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.32E-02	2.00E+00	---	**2E-02**	3.16E-03	3.00E-05		**9E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	1.80E-02	3.00E+01	---	**6E-04**	1.72E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.11E-01	2.00E+00	---	**2E-01**	2.97E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	---	1.50E-01	6.00E+01	---	**3E-03**	1.43E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	---	6.10E-02	7.00E+00	---	**9E-03**	5.82E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	---	1.50E-01	6.00E+01	---	**3E-03**	1.43E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	---	1.80E-01	8.00E+02	---	**2E-04**	1.72E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	6.39E-01	Y	---	1.28E-01	3.00E+01	---	**4E-03**	1.22E-02	7.80E-06		**9E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	1.91E-01	1.00E+00	---	**2E-01**	1.83E-02	4.90E-05		**9E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.00E-01	NA	---	---	9.58E-03	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	---	5.82E-02	5.00E+00	---	**1E-02**	5.55E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	9.43E-02	1.00E+02	---	**9E-04**	8.99E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	1.51E+00	Y	---	3.03E-01	9.77E+01	---	**3E-03**	2.88E-02	2.30E-05		**7E-07**
ETHYL ACETATE	141-78-6	6.48E+00	Y	---	1.30E+00	7.00E+01	---	**2E-02**	1.24E-01	-		---
ETHYLBENZENE	100-41-4	1.13E+00	Y	---	2.26E-01	1.00E+03	---	**2E-04**	2.15E-02	2.50E-06		**5E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.20E-01	NA	---	---	3.05E-02	2.20E-05		**7E-07**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	3.73E+00	Y	---	7.46E-01	1.00E+02	---	**7E-03**	7.11E-02	-		---
METHYLENE CHLORIDE	75-09-2	1.11E+00	Y	---	2.22E-01	6.00E+02	---	**4E-04**	2.12E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	9.98E-01	Y	---	2.00E-01	1.00E+02	---	**2E-03**	1.90E-02	-		---
TETRACHLOROETHENE	127-18-4	2.58E+00	Y	---	5.16E-01	4.00E+01	---	**1E-02**	4.92E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	4.77E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	---	7.04E-02	2.00E+02	---	**4E-04**	6.71E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.30E-02	8.00E+01	---	**2E-04**	1.24E-03	4.40E-06	M	**5E-09**

			HI$_{child}$	**HI$_{adult}$**	**Risk$_{lifetime}$**
Indoor Worker	**0012H**	**Total Inhalation**	---	**9E-01**	**1E-05**
		Based on NDs only	**0E+00**	**9E-01**	**1E-05**
		Based on Detects only	**#VALUE!**	**5E-02**	**8E-07**
		Site-related only	**0E+00**	**4E-02**	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0012H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.11E+00	NA	NA	NA	2.12E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	4.77E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		4.77E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	1.24E-03	4.4E-06		---	---	---	5E-09	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0013H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.03E-01	NA	---	---	9.81E-03	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.32E-02	2.00E+00	---	**2E-02**	3.16E-03	3.00E-05		**9E-08**
1,4-DIOXANE	123-91-1	9.50E-02	N	---	1.90E-02	3.00E+01	---	**6E-04**	1.81E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.11E-01	2.00E+00	---	**2E-01**	2.97E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	---	1.50E-01	6.00E+01	---	**3E-03**	1.43E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	1.30E-01	Y	---	2.60E-02	7.00E+00	---	**4E-03**	2.48E-03	2.60E-05		**6E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	---	1.50E-01	6.00E+01	---	**3E-03**	1.43E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	---	1.80E-01	8.00E+02	---	**2E-04**	1.72E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	6.20E-01	Y	---	1.24E-01	3.00E+01	---	**4E-03**	1.18E-02	7.80E-06		**9E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	1.91E-01	1.00E+00	---	**2E-01**	1.83E-02	4.90E-05		**9E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.00E-01	NA	---	---	9.58E-03	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	6.50E-01	N	---	1.30E-01	5.00E+00	---	**3E-02**	1.24E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	---	8.40E-02	1.00E+02	---	**8E-04**	8.01E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	3.50E-01	Y	---	7.00E-02	9.77E+01	---	**7E-04**	6.68E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	5.50E-01	N	---	1.10E-01	7.00E+01	---	**2E-03**	1.05E-02	-		**---**
ETHYLBENZENE	100-41-4	1.80E-01	Y	---	3.60E-02	1.00E+03	---	**4E-05**	3.43E-03	2.50E-06		**9E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.20E-01	NA	---	---	3.05E-02	2.20E-05		**7E-07**
ISOPROPYL ALCOHOL	67-63-0	2.10E+01	Y	---	4.20E+00	2.00E+02	---	**2E-02**	4.01E-01	-		**---**
M,P-XYLENE	108-38-3	1.52E+00	Y	---	3.04E-01	1.00E+02	---	**3E-03**	2.90E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	2.40E+00	Y	---	4.80E-01	6.00E+02	---	**8E-04**	4.58E-02	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.40E-01	Y	---	2.80E-02	1.00E+02	---	**3E-04**	2.67E-03	-		**---**
TETRACHLOROETHENE	127-18-4	7.00E-02	Y	---	1.40E-02	4.00E+01	---	**4E-04**	1.34E-03	2.60E-07		**3E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	4.77E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.00E+00	Y	---	6.00E-01	2.00E+02	---	**3E-03**	5.72E-02	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.30E-02	8.00E+01	---	**2E-04**	1.24E-03	4.40E-06	M	**5E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0013H**	**Total Inhalation**	**---**	**9E-01**	**1E-05**
		Based on NDs only	**0E+00**	**9E-01**	**1E-05**
		Based on Detects only	**#VALUE!**	**4E-02**	**4E-07**
		Site-related only	**0E+00**	**3E-02**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0013H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.40E+00	NA	NA	NA	4.58E-02	1.0E-08		---	---	---	5E-10	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	4.77E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		4.77E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	1.24E-03	4.4E-06		---	---	---	5E-09	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0017H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.03E-01	NA	---	---	9.81E-03	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.32E-02	2.00E+00	---	**2E-02**	3.16E-03	3.00E-05		**9E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	1.80E-02	3.00E+01	---	**6E-04**	1.72E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	9.83E-01	Y	---	1.97E-01	6.00E+01	---	**3E-03**	1.87E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	---	6.10E-02	7.00E+00	---	**9E-03**	5.82E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	---	7.40E-02	6.00E+01	---	**1E-03**	7.06E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	---	9.01E-02	8.00E+02	---	**1E-04**	8.59E-03	1.10E-05		**9E-08**
BENZENE	71-43-2	8.00E-01	Y	---	1.60E-01	3.00E+01	---	**5E-03**	1.53E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.00E-01	NA	---	---	9.58E-03	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	---	5.82E-02	5.00E+00	---	**1E-02**	5.55E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	9.43E-02	1.00E+02	---	**9E-04**	8.99E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	1.61E+00	Y	---	3.22E-01	9.77E+01	---	**3E-03**	3.07E-02	2.30E-05		**7E-07**
ETHYL ACETATE	141-78-6	3.30E+00	Y	---	6.60E-01	7.00E+01	---	**9E-03**	6.29E-02	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	---	6.51E-02	1.00E+03	---	**7E-05**	6.21E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	2.04E+00	Y	---	4.08E-01	1.00E+02	---	**4E-03**	3.89E-02	-		---
METHYLENE CHLORIDE	75-09-2	8.33E-01	Y	---	1.67E-01	6.00E+02	---	**3E-04**	1.59E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	---	6.51E-02	1.00E+02	---	**7E-04**	6.21E-03	-		---
TETRACHLOROETHENE	127-18-4	1.02E+01	Y	---	2.03E+00	4.00E+01	---	**5E-02**	1.94E-01	2.60E-07		**5E-08**
TRICHLOROETHENE	79-01-6	3.92E-01	Y	---	7.84E-02	2.00E+00	---	**4E-02**	7.48E-03	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	---	5.30E-02	2.00E+02	---	**3E-04**	5.05E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.30E-02	8.00E+01	---	**2E-04**	1.24E-03	4.40E-06	M	**5E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0017H**	**Total Inhalation**	---	**6E-01**	**9E-06**
		Based on NDs only	**0E+00**	**5E-01**	**8E-06**
		Based on Detects only	**#VALUE!**	**1E-01**	**9E-07**
		Site-related only	**0E+00**	**9E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0017H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.33E-01	NA	NA	NA	1.59E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	3.92E-01	NA	NA	NA	7.48E-03	1.0E-06	kidney	---	---	---	7E-09	**7E-09**
TRICHLOROETHENE	79-01-6	3.92E-01	NA		7.48E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	1.24E-03	4.4E-06		---	---	---	5E-09	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0018H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-01	Y	---	4.80E-02	NA	---	---	4.58E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	4.30E-01	Y	---	8.60E-02	2.00E+00	---	**4E-02**	8.20E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	4.90E-01	Y	---	9.80E-02	3.00E+01	---	**3E-03**	9.35E-03	5.00E-06		**5E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	4.60E+00	Y	---	9.20E-01	2.00E+00	---	**5E-01**	8.77E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.80E+00	Y	---	5.60E-01	6.00E+01	---	**9E-03**	5.34E-02	-		---
1,2-DIBROMOETHANE	106-93-4	9.40E-02	Y	---	1.88E-02	9.00E+00	---	**2E-03**	1.79E-03	6.00E-04		**1E-06**
1,2-DICHLOROETHANE	107-06-2	1.30E+00	Y	---	2.60E-01	7.00E+00	---	**4E-02**	2.48E-02	2.60E-05		**6E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	9.00E-01	Y	---	1.80E-01	6.00E+01	---	**3E-03**	1.72E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.60E-01	Y	---	9.20E-02	8.00E+02	---	**1E-04**	8.77E-03	1.10E-05		**1E-07**
BENZENE	71-43-2	5.60E+00	Y	---	1.12E+00	3.00E+01	---	**4E-02**	1.07E-01	7.80E-06		**8E-07**
BENZYL CHLORIDE	100-44-7	8.40E-01	Y	---	1.68E-01	1.00E+00	---	**2E-01**	1.60E-02	4.90E-05		**8E-07**
BROMODICHLOROMETHANE	75-27-4	4.50E-01	Y	---	9.00E-02	NA	---	---	8.58E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	---	1.40E-01	5.00E+00	---	**3E-02**	1.34E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	---	9.20E-02	1.00E+02	---	**9E-04**	8.77E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	2.40E+00	Y	---	4.80E-01	9.77E+01	---	**5E-03**	4.58E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	4.68E+00	Y	---	9.36E-01	7.00E+01	---	**1E-02**	8.93E-02	-		---
ETHYLBENZENE	100-41-4	2.40E+00	Y	---	4.80E-01	1.00E+03	---	**5E-04**	4.58E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	5.30E+00	Y	---	1.06E+00	NA	---	---	1.01E-01	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	1.30E+02	Y	---	2.60E+01	2.00E+02	---	**1E-01**	2.48E+00	-		---
M,P-XYLENE	108-38-3	1.00E+01	Y	---	2.00E+00	1.00E+02	---	**2E-02**	1.91E-01	-		---
METHYLENE CHLORIDE	75-09-2	1.70E+00	Y	---	3.40E-01	6.00E+02	---	**6E-04**	3.24E-02	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	8.30E+00	Y	---	1.66E+00	3.00E+00	---	**6E-01**	1.58E-01	3.40E-05		**5E-06**
O-XYLENE	95-47-6	3.20E+00	Y	---	6.40E-01	1.00E+02	---	**6E-03**	6.10E-02	-		---
TETRACHLOROETHENE	127-18-4	1.40E+01	Y	---	2.80E+00	4.00E+01	---	**7E-02**	2.67E-01	2.60E-07		**7E-08**
TRICHLOROETHENE	79-01-6	8.30E-01	Y	---	1.66E-01	2.00E+00	---	**8E-02**	1.58E-02	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	---	5.30E-02	2.00E+02	---	**3E-04**	5.05E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.30E-02	8.00E+01	---	**2E-04**	1.24E-03	4.40E-06	M	**5E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0018H**	**Total Inhalation**	---	**2E+00**	**1E-05**
		Based on NDs only	**0E+00**	**5E-01**	**2E-07**
		Based on Detects only	**#VALUE!**	**2E+00**	**1E-05**
		Site-related only	**0E+00**	**2E-01**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0018H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.70E+00	NA	NA	NA	3.24E-02	1.0E-08		---	---	---	3E-10	**3E-10**
TRICHLOROETHENE	79-01-6	8.30E-01	NA	NA	NA	1.58E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	8.30E-01	NA		1.58E-02		3.1E-06	NHL+liver	---		5E-08		**5E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	1.24E-03	4.4E-06		---	---	---	5E-09	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0023H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.03E-01	NA	---	---	9.81E-03	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.32E-02	2.00E+00	---	**2E-02**	3.16E-03	3.00E-05		**9E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	1.80E-02	3.00E+01	---	**6E-04**	1.72E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.70E-01	N	---	7.40E-02	6.00E+01	---	**1E-03**	7.06E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	---	6.10E-02	7.00E+00	---	**9E-03**	5.82E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	---	7.40E-02	6.00E+01	---	**1E-03**	7.06E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	---	9.01E-02	8.00E+02	---	**1E-04**	8.59E-03	1.10E-05		**9E-08**
BENZENE	71-43-2	1.40E+00	Y	---	2.80E-01	3.00E+01	---	**9E-03**	2.67E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.00E-01	NA	---	---	9.58E-03	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	---	5.82E-02	5.00E+00	---	**1E-02**	5.55E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	9.43E-02	1.00E+02	---	**9E-04**	8.99E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	3.66E-01	N	---	7.32E-02	9.77E+01	---	**7E-04**	6.98E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	2.70E-01	N	---	5.40E-02	7.00E+01	---	**8E-04**	5.15E-03	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	---	6.51E-02	1.00E+03	---	**7E-05**	6.21E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	2.30E+00	Y	---	4.60E-01	1.00E+02	---	**5E-03**	4.39E-02	-		---
METHYLENE CHLORIDE	75-09-2	6.40E-01	Y	---	1.28E-01	6.00E+02	---	**2E-04**	1.22E-02	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	6.94E-01	Y	---	1.39E-01	1.00E+02	---	**1E-03**	1.32E-02	-		---
TETRACHLOROETHENE	127-18-4	1.40E+00	Y	---	2.80E-01	4.00E+01	---	**7E-03**	2.67E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	1.35E-01	N	---	2.70E-02	2.00E+00	---	**1E-02**	2.57E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	---	5.30E-02	2.00E+02	---	**3E-04**	5.05E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.30E-02	8.00E+01	---	**2E-04**	1.24E-03	4.40E-06	M	**5E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0023H**	**Total Inhalation**	---	**5E-01**	**9E-06**
		Based on NDs only	**0E+00**	**5E-01**	**9E-06**
		Based on Detects only	**#VALUE!**	**2E-02**	**2E-07**
		Site-related only	**0E+00**	**2E-02**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0023H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.40E-01	NA	NA	NA	1.22E-02	1.0E-08		---	---	---	1E-10	**1E-10**
TRICHLOROETHENE	79-01-6	1.35E-01	NA	NA	NA	2.57E-03	1.0E-06	kidney	---	---	---	3E-09	**3E-09**
TRICHLOROETHENE	79-01-6	1.35E-01	NA		2.57E-03		3.1E-06	NHL+liver	---		8E-09		**8E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	1.24E-03	4.4E-06		---	---	---	5E-09	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0025H**

Pathway:
Inhalation of Indoor Air

			CTE child	CTE adult			CTE lifetime			
		TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.03E-01	NA	---	---	9.81E-03	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.32E-02	2.00E+00	---	**2E-02**	3.16E-03	3.00E-05		**9E-08**
1,4-DIOXANE	123-91-1	2.34E+00	Y	---	4.68E-01	3.00E+01	---	**2E-02**	4.46E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.11E-01	2.00E+00	---	**2E-01**	2.97E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.60E-01	Y	---	5.20E-02	6.00E+01	---	**9E-04**	4.96E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	3.30E-01	Y	---	6.60E-02	7.00E+00	---	**9E-03**	6.29E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	---	1.50E-01	6.00E+01	---	**3E-03**	1.43E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	2.10E+00	Y	---	4.20E-01	8.00E+02	---	**5E-04**	4.01E-02	1.10E-05		**4E-07**
BENZENE	71-43-2	8.30E-01	Y	---	1.66E-01	3.00E+01	---	**6E-03**	1.58E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	1.91E-01	1.00E+00	---	**2E-01**	1.83E-02	4.90E-05		**9E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.00E-01	NA	---	---	9.58E-03	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.60E-01	5.00E+00	---	**3E-02**	1.53E-02	-		---
CARBON TETRACHLORIDE	56-23-5	5.60E-01	Y	---	1.12E-01	1.00E+02	---	**1E-03**	1.07E-02	6.00E-06		**6E-08**
CHLOROFORM	67-66-3	1.90E+00	Y	---	3.80E-01	9.77E+01	---	**4E-03**	3.62E-02	2.30E-05		**8E-07**
ETHYL ACETATE	141-78-6	3.90E+00	Y	---	7.80E-01	7.00E+01	---	**1E-02**	7.44E-02	-		---
ETHYLBENZENE	100-41-4	2.10E-01	Y	---	4.20E-02	1.00E+03	---	**4E-05**	4.01E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.20E-01	NA	---	---	3.05E-02	2.20E-05		**7E-07**
ISOPROPYL ALCOHOL	67-63-0	7.70E+00	Y	---	1.54E+00	2.00E+02	---	**8E-03**	1.47E-01	-		---
M,P-XYLENE	108-38-3	1.30E+00	Y	---	2.60E-01	1.00E+02	---	**3E-03**	2.48E-02	-		---
METHYLENE CHLORIDE	75-09-2	3.33E+00	Y	---	6.67E-01	6.00E+02	---	**1E-03**	6.36E-02	1.00E-08	M	**6E-10**
NAPHTHALENE	91-20-3	8.80E-02	Y	---	1.76E-02	3.00E+00	---	**6E-03**	1.68E-03	3.40E-05		**6E-08**
O-XYLENE	95-47-6	3.10E-01	Y	---	6.20E-02	1.00E+02	---	**6E-04**	5.91E-03	-		---
TETRACHLOROETHENE	127-18-4	4.40E-01	Y	---	8.80E-02	4.00E+01	---	**2E-03**	8.39E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	4.77E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	---	7.04E-02	2.00E+02	---	**4E-04**	6.71E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.30E-02	8.00E+01	---	**2E-04**	1.24E-03	4.40E-06	M	**5E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0025H**	**Total Inhalation**	---	**9E-01**	**1E-05**
		Based on NDs only	**0E+00**	**9E-01**	**1E-05**
		Based on Detects only	**#VALUE!**	**7E-02**	**2E-06**
		Site-related only	**0E+00**	**4E-02**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0025H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.33E+00	NA	NA	NA	6.36E-02	1.0E-08		---	---	---	6E-10	**6E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	4.77E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		4.77E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	1.24E-03	4.4E-06		---	---	---	5E-09	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0026H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.03E-01	NA	---	---	9.81E-03	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.32E-02	2.00E+00	---	**2E-02**	3.16E-03	3.00E-05		**9E-08**
1,4-DIOXANE	123-91-1	2.60E-01	Y	---	5.20E-02	3.00E+01	---	**2E-03**	4.96E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.80E-01	Y	---	1.76E-01	2.00E-01	---	**9E-01**	1.68E-02	1.60E-05		**3E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.11E-01	2.00E+00	---	**2E-01**	2.97E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E+00	Y	---	3.20E-01	6.00E+01	---	**5E-03**	3.05E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	3.00E+00	Y	---	6.00E-01	7.00E+00	---	**9E-02**	5.72E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	2.50E-01	Y	---	5.00E-02	6.00E+01	---	**8E-04**	4.77E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	8.40E-02	Y	---	1.68E-02	8.00E+02	---	**2E-05**	1.60E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	7.70E-01	Y	---	1.54E-01	3.00E+01	---	**5E-03**	1.47E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	1.91E-01	1.00E+00	---	**2E-01**	1.83E-02	4.90E-05		**9E-07**
BROMODICHLOROMETHANE	75-27-4	6.10E-01	Y	---	1.22E-01	NA	---	---	1.16E-02	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.60E-01	5.00E+00	---	**3E-02**	1.53E-02	-		---
CARBON TETRACHLORIDE	56-23-5	5.20E-01	Y	---	1.04E-01	1.00E+02	---	**1E-03**	9.92E-03	6.00E-06		**6E-08**
CHLOROFORM	67-66-3	2.60E+00	Y	---	5.20E-01	9.77E+01	---	**5E-03**	4.96E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	5.10E+00	Y	---	1.02E+00	7.00E+01	---	**1E-02**	9.73E-02	-		---
ETHYLBENZENE	100-41-4	2.30E+00	Y	---	4.60E-01	1.00E+03	---	**5E-04**	4.39E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.20E-01	NA	---	---	3.05E-02	2.20E-05		**7E-07**
ISOPROPYL ALCOHOL	67-63-0	2.90E+01	Y	---	5.80E+00	2.00E+02	---	**3E-02**	5.53E-01	-		---
M,P-XYLENE	108-38-3	9.12E+00	Y	---	1.82E+00	1.00E+02	---	**2E-02**	1.74E-01	-		---
METHYLENE CHLORIDE	75-09-2	2.22E+00	Y	---	4.44E-01	6.00E+02	---	**7E-04**	4.24E-02	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	3.00E-02	N	---	6.00E-03	3.00E+00	---	**2E-03**	5.72E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	2.10E+00	Y	---	4.20E-01	1.00E+02	---	**4E-03**	4.01E-02	-		---
TETRACHLOROETHENE	127-18-4	1.20E+01	Y	---	2.40E+00	4.00E+01	---	**6E-02**	2.29E-01	2.60E-07		**6E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	Y	---	5.00E-02	2.00E+00	---	**3E-02**	4.77E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	---	7.04E-02	2.00E+02	---	**4E-04**	6.71E-03	-		---
VINYL CHLORIDE	75-01-4	1.60E-02	Y	---	3.20E-03	8.00E+01	---	**4E-05**	3.05E-04	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0026H**	**Total Inhalation**	---	**2E+00**	**1E-05**
		Based on NDs only	**0E+00**	**4E-01**	**9E-06**
		Based on Detects only	**#VALUE!**	**1E+00**	**4E-06**
		Site-related only	**0E+00**	**9E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0026H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.22E+00	NA	NA	NA	4.24E-02	1.0E-08		---	---	---	4E-10	**4E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	4.77E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		4.77E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	1.60E-02	NA	NA	NA	3.05E-04	4.4E-06		---	---	---	1E-09	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0027H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.03E-01	NA	---	---	9.81E-03	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.32E-02	2.00E+00	---	**2E-02**	3.16E-03	3.00E-05		**9E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	1.80E-02	3.00E+01	---	**6E-04**	1.72E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.11E-01	2.00E+00	---	**2E-01**	2.97E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	---	1.50E-01	6.00E+01	---	**3E-03**	1.43E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	3.11E+00	Y	---	6.23E-01	7.00E+00	---	**9E-02**	5.94E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	---	1.50E-01	6.00E+01	---	**3E-03**	1.43E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	3.42E+00	Y	---	6.85E-01	8.00E+02	---	**9E-04**	6.53E-02	1.10E-05		**7E-07**
BENZENE	71-43-2	7.34E-01	Y	---	1.47E-01	3.00E+01	---	**5E-03**	1.40E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	1.91E-01	1.00E+00	---	**2E-01**	1.83E-02	4.90E-05		**9E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.00E-01	NA	---	---	9.58E-03	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	---	5.82E-02	5.00E+00	---	**1E-02**	5.55E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	9.43E-02	1.00E+02	---	**9E-04**	8.99E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	3.66E-01	N	---	7.32E-02	9.77E+01	---	**7E-04**	6.98E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	1.10E+00	Y	---	2.20E-01	7.00E+01	---	**3E-03**	2.10E-02	-		**---**
ETHYLBENZENE	100-41-4	3.25E-01	N	---	6.51E-02	1.00E+03	---	**7E-05**	6.21E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.20E-01	NA	---	---	3.05E-02	2.20E-05		**7E-07**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
M,P-XYLENE	108-38-3	1.35E+00	Y	---	2.70E-01	1.00E+02	---	**3E-03**	2.57E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	1.25E+00	Y	---	2.50E-01	6.00E+02	---	**4E-04**	2.38E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	3.25E-01	N	---	6.51E-02	1.00E+02	---	**7E-04**	6.21E-03	-		**---**
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	6.68E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	4.77E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	---	7.04E-02	2.00E+02	---	**4E-04**	6.71E-03	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.30E-02	8.00E+01	---	**2E-04**	1.24E-03	4.40E-06	M	**5E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0027H**	**Total Inhalation**	**---**	**1E+00**	**1E-05**
		Based on NDs only	**0E+00**	**9E-01**	**1E-05**
		Based on Detects only	**#VALUE!**	**1E-01**	**2E-06**
		Site-related only	**0E+00**	**3E-02**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0027H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.25E+00	NA	NA	NA	2.38E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	4.77E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		4.77E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	1.24E-03	4.4E-06		---	---	---	5E-09	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0029H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.03E-01	NA	---	---	9.81E-03	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.32E-02	2.00E+00	---	**2E-02**	3.16E-03	3.00E-05		**9E-08**
1,4-DIOXANE	123-91-1	2.80E-01	Y	---	5.60E-02	3.00E+01	---	**2E-03**	5.34E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.11E-01	2.00E+00	---	**2E-01**	2.97E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E-01	Y	---	3.20E-02	6.00E+01	---	**5E-04**	3.05E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	7.90E-02	Y	---	1.58E-02	7.00E+00	---	**2E-03**	1.51E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	---	1.50E-01	6.00E+01	---	**3E-03**	1.43E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	---	1.80E-01	8.00E+02	---	**2E-04**	1.72E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	1.31E+00	Y	---	2.62E-01	3.00E+01	---	**9E-03**	2.50E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	1.91E-01	1.00E+00	---	**2E-01**	1.83E-02	4.90E-05		**9E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.00E-01	NA	---	---	9.58E-03	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	---	1.40E-01	5.00E+00	---	**3E-02**	1.34E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	---	8.00E-02	1.00E+02	---	**8E-04**	7.63E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	1.00E+00	Y	---	2.00E-01	9.77E+01	---	**2E-03**	1.91E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	5.50E-01	N	---	1.10E-01	7.00E+01	---	**2E-03**	1.05E-02	-		---
ETHYLBENZENE	100-41-4	1.80E-01	Y	---	3.60E-02	1.00E+03	---	**4E-05**	3.43E-03	2.50E-06		**9E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.20E-01	NA	---	---	3.05E-02	2.20E-05		**7E-07**
ISOPROPYL ALCOHOL	67-63-0	1.70E+01	Y	---	3.40E+00	2.00E+02	---	**2E-02**	3.24E-01	-		---
M,P-XYLENE	108-38-3	2.21E+00	Y	---	4.42E-01	1.00E+02	---	**4E-03**	4.21E-02	-		---
METHYLENE CHLORIDE	75-09-2	1.91E+01	Y	---	3.82E+00	6.00E+02	---	**6E-03**	3.64E-01	1.00E-08	M	**4E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.80E-01	Y	---	3.60E-02	1.00E+02	---	**4E-04**	3.43E-03	-		---
TETRACHLOROETHENE	127-18-4	6.58E+00	Y	---	1.32E+00	4.00E+01	---	**3E-02**	1.25E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	3.70E-02	Y	---	7.40E-03	2.00E+00	---	**4E-03**	7.06E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	3.52E-01	N	---	7.04E-02	2.00E+02	---	**4E-04**	6.71E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.30E-02	8.00E+01	---	**2E-04**	1.24E-03	4.40E-06	M	**5E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0029H**	**Total Inhalation**	---	**9E-01**	**1E-05**
		Based on NDs only	**0E+00**	**8E-01**	**1E-05**
		Based on Detects only	**#VALUE!**	**8E-02**	**8E-07**
		Site-related only	**0E+00**	**4E-02**	**7E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0029H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.91E+01	NA	NA	NA	3.64E-01	1.0E-08		---	---	---	4E-09	**4E-09**
TRICHLOROETHENE	79-01-6	3.70E-02	NA	NA	NA	7.06E-04	1.0E-06	kidney	---	---	---	7E-10	**7E-10**
TRICHLOROETHENE	79-01-6	3.70E-02	NA		7.06E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	1.24E-03	4.4E-06		---	---	---	5E-09	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0030H**

Pathway:
Inhalation of Indoor Air

			CTE child	CTE adult			CTE lifetime			
		TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.03E-01	NA	---	---	9.81E-03	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.32E-02	2.00E+00	---	**2E-02**	3.16E-03	3.00E-05		**9E-08**
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	---	2.22E-01	2.00E+00	---	**1E-01**	2.12E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.21E+00	Y	---	4.42E-01	6.00E+01	---	**7E-03**	4.22E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	9.30E-01	Y	---	1.86E-01	7.00E+00	---	**3E-02**	1.77E-02	2.60E-05		**5E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	9.00E-01	Y	---	1.80E-01	6.00E+01	---	**3E-03**	1.72E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	---	9.01E-02	8.00E+02	---	**1E-04**	8.59E-03	1.10E-05		**9E-08**
BENZENE	71-43-2	1.12E+00	Y	---	2.24E-01	3.00E+01	---	**7E-03**	2.13E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	---	1.60E-01	1.00E+00	---	**2E-01**	1.53E-02	4.90E-05		**7E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.00E-01	NA	---	---	9.58E-03	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	---	5.82E-02	5.00E+00	---	**1E-02**	5.55E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	9.43E-02	1.00E+02	---	**9E-04**	8.99E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	3.66E-01	N	---	7.32E-02	9.77E+01	---	**7E-04**	6.98E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	3.70E+00	Y	---	7.40E-01	7.00E+01	---	**1E-02**	7.06E-02	-		---
ETHYLBENZENE	100-41-4	1.13E+00	Y	---	2.26E-01	1.00E+03	---	**2E-04**	2.15E-02	2.50E-06		**5E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.20E-01	NA	---	---	3.05E-02	2.20E-05		**7E-07**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	4.80E+00	Y	---	9.60E-01	1.00E+02	---	**1E-02**	9.15E-02	-		---
METHYLENE CHLORIDE	75-09-2	1.11E+00	Y	---	2.22E-01	6.00E+02	---	**4E-04**	2.12E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.60E+00	Y	---	3.20E-01	1.00E+02	---	**3E-03**	3.05E-02	-		---
TETRACHLOROETHENE	127-18-4	5.90E+00	Y	---	1.18E+00	4.00E+01	---	**3E-02**	1.13E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	N	---	8.10E-02	2.00E+00	---	**4E-02**	7.72E-03	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	---	5.30E-02	2.00E+02	---	**3E-04**	5.05E-03	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	---	3.83E-02	8.00E+01	---	**5E-04**	3.65E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0030H**	**Total Inhalation**	---	**9E-01**	**1E-05**
		Based on NDs only	**0E+00**	**8E-01**	**1E-05**
		Based on Detects only	**#VALUE!**	**1E-01**	**7E-07**
		Site-related only	**0E+00**	**7E-02**	**8E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0030H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.11E+00	NA	NA	NA	2.12E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	4.05E-01	NA	NA	NA	7.72E-03	1.0E-06	kidney	---	---	---	8E-09	**8E-09**
TRICHLOROETHENE	79-01-6	4.05E-01	NA		7.72E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	1.92E-01	NA	NA	NA	3.65E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0036H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime		
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02		

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.03E-01	NA	---	---	9.81E-03	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.32E-02	2.00E+00	---	**2E-02**	3.16E-03	3.00E-05		**9E-08**
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	---	2.22E-01	2.00E+00	---	**1E-01**	2.12E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.70E-01	N	---	7.40E-02	6.00E+01	---	**1E-03**	7.06E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	---	6.10E-02	7.00E+00	---	**9E-03**	5.82E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	---	7.40E-02	6.00E+01	---	**1E-03**	7.06E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	---	9.01E-02	8.00E+02	---	**1E-04**	8.59E-03	1.10E-05		**9E-08**
BENZENE	71-43-2	1.15E+00	Y	---	2.30E-01	3.00E+01	---	**8E-03**	2.19E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	---	1.60E-01	1.00E+00	---	**2E-01**	1.53E-02	4.90E-05		**7E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.00E-01	NA	---	---	9.58E-03	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	---	5.82E-02	5.00E+00	---	**1E-02**	5.55E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	9.43E-02	1.00E+02	---	**9E-04**	8.99E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	1.10E+00	Y	---	2.20E-01	9.77E+01	---	**2E-03**	2.10E-02	2.30E-05		**5E-07**
ETHYL ACETATE	141-78-6	6.12E+00	Y	---	1.22E+00	7.00E+01	---	**2E-02**	1.17E-01	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	---	6.51E-02	1.00E+03	---	**7E-05**	6.21E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.20E-01	NA	---	---	3.05E-02	2.20E-05		**7E-07**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	8.30E-01	Y	---	1.66E-01	1.00E+02	---	**2E-03**	1.58E-02	-		---
METHYLENE CHLORIDE	75-09-2	1.10E+00	Y	---	2.20E-01	6.00E+02	---	**4E-04**	2.10E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	---	6.51E-02	1.00E+02	---	**7E-04**	6.21E-03	-		---
TETRACHLOROETHENE	127-18-4	3.60E+00	Y	---	7.20E-01	4.00E+01	---	**2E-02**	6.87E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	N	---	8.10E-02	2.00E+00	---	**4E-02**	7.72E-03	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	---	5.30E-02	2.00E+02	---	**3E-04**	5.05E-03	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	---	3.83E-02	8.00E+01	---	**5E-04**	3.65E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0036H**	**Total Inhalation**	---	**8E-01**	**1E-05**
		Based on NDs only	**0E+00**	**8E-01**	**1E-05**
		Based on Detects only	**#VALUE!**	**5E-02**	**7E-07**
		Site-related only	**0E+00**	**6E-02**	**7E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0036H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.10E+00	NA	NA	NA	2.10E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	4.05E-01	NA	NA	NA	7.72E-03	1.0E-06	kidney	---	---	---	8E-09	**8E-09**
TRICHLOROETHENE	79-01-6	4.05E-01	NA		7.72E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	1.92E-01	NA	NA	NA	3.65E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0037H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-01	Y	---	2.20E-02	NA	---	---	2.10E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	3.00E-01	Y	---	6.00E-02	2.00E+00	---	**3E-02**	5.72E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	1.70E+00	Y	---	3.40E-01	3.00E+01	---	**1E-02**	3.24E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.60E+00	N	---	3.20E-01	2.00E+00	---	**2E-01**	3.05E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.40E+00	Y	---	1.08E+00	6.00E+01	---	**2E-02**	1.03E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	7.00E+00	Y	---	1.40E+00	7.00E+00	---	**2E-01**	1.34E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	1.20E+00	Y	---	2.40E-01	6.00E+01	---	**4E-03**	2.29E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	---	9.01E-02	8.00E+02	---	**1E-04**	8.59E-03	1.10E-05		**9E-08**
BENZENE	71-43-2	3.70E+00	Y	---	7.40E-01	3.00E+01	---	**2E-02**	7.06E-02	7.80E-06		**6E-07**
BENZYL CHLORIDE	100-44-7	1.20E-01	N	---	2.40E-02	1.00E+00	---	**2E-02**	2.29E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	5.70E-01	Y	---	1.14E-01	NA	---	---	1.09E-02	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	4.00E-01	N	---	8.00E-02	5.00E+00	---	**2E-02**	7.63E-03	-		---
CARBON TETRACHLORIDE	56-23-5	5.50E-01	Y	---	1.10E-01	1.00E+02	---	**1E-03**	1.05E-02	6.00E-06		**6E-08**
CHLOROFORM	67-66-3	3.20E+00	Y	---	6.40E-01	9.77E+01	---	**7E-03**	6.10E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	2.40E+00	Y	---	4.80E-01	7.00E+01	---	**7E-03**	4.58E-02	-		---
ETHYLBENZENE	100-41-4	3.80E+00	Y	---	7.60E-01	1.00E+03	---	**8E-04**	7.25E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	2.15E+00	N	---	4.30E-01	NA	---	---	4.10E-02	2.20E-05		**9E-07**
ISOPROPYL ALCOHOL	67-63-0	7.50E+01	Y	---	1.50E+01	2.00E+02	---	**8E-02**	1.43E+00	-		---
M,P-XYLENE	108-38-3	1.60E+01	Y	---	3.20E+00	1.00E+02	---	**3E-02**	3.05E-01	-		---
METHYLENE CHLORIDE	75-09-2	8.20E-01	Y	---	1.64E-01	6.00E+02	---	**3E-04**	1.56E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	7.20E-02	Y	---	1.44E-02	3.00E+00	---	**5E-03**	1.37E-03	3.40E-05		**5E-08**
O-XYLENE	95-47-6	5.60E+00	Y	---	1.12E+00	1.00E+02	---	**1E-02**	1.07E-01	-		---
TETRACHLOROETHENE	127-18-4	8.70E+00	Y	---	1.74E+00	4.00E+01	---	**4E-02**	1.66E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	1.00E-01	Y	---	2.00E-02	2.00E+00	---	**1E-02**	1.91E-03	4.10E-06	M	**8E-09**
VINYL ACETATE	108-05-4	2.65E-01	N	---	5.30E-02	2.00E+02	---	**3E-04**	5.05E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.30E-02	8.00E+01	---	**2E-04**	1.24E-03	4.40E-06	M	**5E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0037H**	**Total Inhalation**	---	**1E+00**	**1E-05**
		Based on NDs only	**0E+00**	**6E-01**	**8E-06**
		Based on Detects only	**#VALUE!**	**5E-01**	**7E-06**
		Site-related only	**0E+00**	**6E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0037H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.20E-01	NA	NA	NA	1.56E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	NA	NA	NA	1.91E-03	1.0E-06	kidney	---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	NA		1.91E-03		3.1E-06	NHL+liver	---		6E-09		**6E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	1.24E-03	4.4E-06		---	---	---	5E-09	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0038H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.03E-01	NA	---	---	9.81E-03	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.32E-02	2.00E+00	---	**2E-02**	3.16E-03	3.00E-05		**9E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	1.80E-02	3.00E+01	---	**6E-04**	1.72E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.11E-01	2.00E+00	---	**2E-01**	2.97E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	---	1.50E-01	6.00E+01	---	**3E-03**	1.43E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	---	6.10E-02	7.00E+00	---	**9E-03**	5.82E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	---	1.50E-01	6.00E+01	---	**3E-03**	1.43E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	---	1.80E-01	8.00E+02	---	**2E-04**	1.72E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	5.11E-01	Y	---	1.02E-01	3.00E+01	---	**3E-03**	9.74E-03	7.80E-06		**8E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	1.91E-01	1.00E+00	---	**2E-01**	1.83E-02	4.90E-05		**9E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.00E-01	NA	---	---	9.58E-03	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	---	5.82E-02	5.00E+00	---	**1E-02**	5.55E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	9.43E-02	1.00E+02	---	**9E-04**	8.99E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	1.42E+00	Y	---	2.83E-01	9.77E+01	---	**3E-03**	2.70E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	5.50E-01	N	---	1.10E-01	7.00E+01	---	**2E-03**	1.05E-02	-		**---**
ETHYLBENZENE	100-41-4	3.25E-01	N	---	6.51E-02	1.00E+03	---	**7E-05**	6.21E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.20E-01	NA	---	---	3.05E-02	2.20E-05		**7E-07**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
M,P-XYLENE	108-38-3	1.30E+00	Y	---	2.60E-01	1.00E+02	---	**3E-03**	2.48E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	3.12E+00	Y	---	6.25E-01	6.00E+02	---	**1E-03**	5.96E-02	1.00E-08	M	**6E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	3.25E-01	N	---	6.51E-02	1.00E+02	---	**7E-04**	6.21E-03	-		**---**
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	6.68E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	4.77E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	---	7.04E-02	2.00E+02	---	**4E-04**	6.71E-03	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.30E-02	8.00E+01	---	**2E-04**	1.24E-03	4.40E-06	M	**5E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0038H**	**Total Inhalation**	**---**	**9E-01**	**1E-05**
		Based on NDs only	**0E+00**	**9E-01**	**1E-05**
		Based on Detects only	**#VALUE!**	**1E-02**	**7E-07**
		Site-related only	**0E+00**	**3E-02**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0038H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.12E+00	NA	NA	NA	5.96E-02	1.0E-08		---	---	---	6E-10	**6E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	4.77E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		4.77E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	1.24E-03	4.4E-06		---	---	---	5E-09	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0040H**

Pathway:
Inhalation of Indoor Air

			CTE child	CTE adult			CTE lifetime			
		TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02			

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.03E-01	NA	---	---	9.81E-03	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	1.44E+00	Y	---	2.87E-01	2.00E+00	---	**1E-01**	2.74E-02	3.00E-05		**8E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	1.80E-02	3.00E+01	---	**6E-04**	1.72E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.10E+00	Y	---	8.20E-01	6.00E+01	---	**1E-02**	7.82E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	---	6.10E-02	7.00E+00	---	**9E-03**	5.82E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	1.10E+00	Y	---	2.20E-01	6.00E+01	---	**4E-03**	2.10E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	---	9.01E-02	8.00E+02	---	**1E-04**	8.59E-03	1.10E-05		**9E-08**
BENZENE	71-43-2	2.60E+00	Y	---	5.20E-01	3.00E+01	---	**2E-02**	4.96E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.00E-01	NA	---	---	9.58E-03	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	---	5.82E-02	5.00E+00	---	**1E-02**	5.55E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	9.43E-02	1.00E+02	---	**9E-04**	8.99E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	4.80E+00	Y	---	9.60E-01	9.77E+01	---	**1E-02**	9.15E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	1.30E+00	Y	---	2.60E-01	7.00E+01	---	**4E-03**	2.48E-02	-		---
ETHYLBENZENE	100-41-4	2.20E+00	Y	---	4.40E-01	1.00E+03	---	**4E-04**	4.20E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	7.90E+00	Y	---	1.58E+00	1.00E+02	---	**2E-02**	1.51E-01	-		---
METHYLENE CHLORIDE	75-09-2	2.60E+02	Y	---	5.20E+01	6.00E+02	---	**9E-02**	4.96E+00	1.00E-08	M	**5E-08**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.34E+00	Y	---	4.69E-01	1.00E+02	---	**5E-03**	4.47E-02	-		---
TETRACHLOROETHENE	127-18-4	1.53E+02	Y	---	3.06E+01	4.00E+01	---	**8E-01**	2.92E+00	2.60E-07		**8E-07**
TRICHLOROETHENE	79-01-6	1.26E+01	Y	---	2.52E+00	2.00E+00	---	**1E+00**	2.40E-01	4.10E-06	M	**1E-06**
VINYL ACETATE	108-05-4	2.65E-01	N	---	5.30E-02	2.00E+02	---	**3E-04**	5.05E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.30E-02	8.00E+01	---	**2E-04**	1.24E-03	4.40E-06	M	**5E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0040H**	**Total Inhalation**	---	**3E+00**	**1E-05**
		Based on NDs only	**0E+00**	**5E-01**	**8E-06**
		Based on Detects only	**#VALUE!**	**2E+00**	**5E-06**
		Site-related only	**0E+00**	**2E+00**	**2E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0040H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.60E+02	NA	NA	NA	4.96E+00	1.0E-08		---	---	---	5E-08	**5E-08**
TRICHLOROETHENE	79-01-6	1.26E+01	NA	NA	NA	2.40E-01	1.0E-06	kidney	---	---	---	2E-07	**2E-07**
TRICHLOROETHENE	79-01-6	1.26E+01	NA		2.40E-01		3.1E-06	NHL+liver	---		7E-07		**7E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	1.24E-03	4.4E-06		---	---	---	5E-09	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0041H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	---	2.10E-03	NA	---	---	2.00E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	4.90E-02	N	---	9.80E-03	2.00E+00	---	**5E-03**	9.35E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	7.00E-02	N	---	1.40E-02	3.00E+01	---	**5E-04**	1.34E-03	5.00E-06		**7E-09**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	---	1.40E-03	2.00E-01	---	**7E-03**	1.34E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.80E-01	N	---	9.60E-02	2.00E+00	---	**5E-02**	9.15E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E-01	Y	---	2.80E-02	6.00E+01	---	**5E-04**	2.67E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	---	6.60E-03	9.00E+00	---	**7E-04**	6.29E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	5.10E-01	Y	---	1.02E-01	7.00E+00	---	**1E-02**	9.73E-03	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	---	1.80E-02	4.00E+00	---	**5E-03**	1.72E-03	3.70E-06		**6E-09**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	---	1.20E-02	6.00E+01	---	**2E-04**	1.14E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	---	1.00E-02	8.00E+02	---	**1E-05**	9.54E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	4.80E-01	Y	---	9.60E-02	3.00E+01	---	**3E-03**	9.15E-03	7.80E-06		**7E-08**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	---	1.70E-02	1.00E+00	---	**2E-02**	1.62E-03	4.90E-05		**8E-08**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	---	2.50E-02	NA	---	---	2.38E-03	3.70E-05		**9E-08**
BROMOMETHANE	74-83-9	6.50E-01	N	---	1.30E-01	5.00E+00	---	**3E-02**	1.24E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	---	8.60E-02	1.00E+02	---	**9E-04**	8.20E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	9.00E-01	Y	---	1.80E-01	9.77E+01	---	**2E-03**	1.72E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.40E-01	Y	---	2.80E-02	1.00E+03	---	**3E-05**	2.67E-03	2.50E-06		**7E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	---	1.30E-01	NA	---	---	1.24E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	2.70E+01	Y	---	5.40E+00	2.00E+02	---	**3E-02**	5.15E-01	-		---
M,P-XYLENE	108-38-3	4.00E-01	Y	---	8.00E-02	1.00E+02	---	**8E-04**	7.63E-03	-		---
METHYLENE CHLORIDE	75-09-2	3.20E-01	N	---	6.40E-02	6.00E+02	---	**1E-04**	6.10E-03	1.00E-08	M	**6E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.40E-01	Y	---	2.80E-02	1.00E+02	---	**3E-04**	2.67E-03	-		---
TETRACHLOROETHENE	127-18-4	4.60E+00	Y	---	9.20E-01	4.00E+01	---	**2E-02**	8.77E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	4.77E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.00E-03	N	---	1.60E-03	8.00E+01	---	**2E-05**	1.53E-04	4.40E-06	M	**7E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0041H**	**Total Inhalation**	---	**2E-01**	**2E-06**
		Based on NDs only	**0E+00**	**1E-01**	**9E-07**
		Based on Detects only	**#VALUE!**	**7E-02**	**8E-07**
		Site-related only	**0E+00**	**5E-02**	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0041H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.20E-01	NA	NA	NA	6.10E-03	1.0E-08		---	---	---	6E-11	**6E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	4.77E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		4.77E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	8.00E-03	NA	NA	NA	1.53E-04	4.4E-06		---	---	---	7E-10	**7E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0045S**

Pathway:
Inhalation of Indoor Air

			CTE child	CTE adult			CTE lifetime			
		TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02			

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	2.50E-01	N	---	5.00E-02	7.00E+00	---	**7E-03**	4.77E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	4.00E+01	Y	---	8.00E+00	4.00E+01	---	**2E-01**	7.63E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	1.30E+00	Y	---	2.60E-01	2.00E+00	---	**1E-01**	2.48E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	5.30E-01	Y	---	1.06E-01	8.00E+01	---	**1E-03**	1.01E-02	4.40E-06	M	**4E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0045S**	**Total Inhalation**	---	**3E-01**	**5E-07**
		Based on NDs only	**0E+00**	**7E-03**	**1E-07**
		Based on Detects only	**#VALUE!**	**3E-01**	**3E-07**
		Site-related only	**0E+00**	**3E-01**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0045S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	1.30E+00	NA	NA	NA	2.48E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	1.30E+00	NA		2.48E-02		3.1E-06	NHL+liver	---		8E-08		**8E-08**
VINYL CHLORIDE	75-01-4	5.30E-01	NA	NA	NA	1.01E-02	4.4E-06		---	---	---	4E-08	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0047H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime	
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02	

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	9.00E+00	Y	---	1.80E+00	4.00E+01	---	**5E-02**	1.72E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	4.77E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0047H**	**Total Inhalation**	---	**7E-02**	**6E-08**
		Based on NDs only	**0E+00**	**3E-02**	**2E-08**
		Based on Detects only	**#VALUE!**	**5E-02**	**4E-08**
		Site-related only	**0E+00**	**7E-02**	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0047H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	4.77E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		4.77E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0050H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime	
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02	

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	6.68E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	4.77E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0050H**	**Total Inhalation**	---	**3E-02**	**2E-08**
		Based on NDs only	**0E+00**	**3E-02**	**2E-08**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0050H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	4.77E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		4.77E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0051H**

Pathway:
Inhalation of Indoor Air

			CTE child	CTE adult			CTE lifetime			
		TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.03E-01	NA	---	---	9.81E-03	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.32E-02	2.00E+00	---	**2E-02**	3.16E-03	3.00E-05		**9E-08**
1,4-DIOXANE	123-91-1	2.20E-01	Y	---	4.40E-02	3.00E+01	---	**1E-03**	4.20E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.20E+00	N	---	2.40E-01	2.00E+00	---	**1E-01**	2.29E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	7.80E-01	Y	---	1.56E-01	6.00E+01	---	**3E-03**	1.49E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	---	2.80E-02	7.00E+00	---	**4E-03**	2.67E-03	2.60E-05		**7E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	---	7.40E-02	6.00E+01	---	**1E-03**	7.06E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	2.10E-01	Y	---	4.20E-02	8.00E+02	---	**5E-05**	4.01E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	6.30E-01	Y	---	1.26E-01	3.00E+01	---	**4E-03**	1.20E-02	7.80E-06		**9E-08**
BENZYL CHLORIDE	100-44-7	2.35E-01	N	---	4.70E-02	1.00E+00	---	**5E-02**	4.48E-03	4.90E-05		**2E-07**
BROMODICHLOROMETHANE	75-27-4	3.60E-01	Y	---	7.20E-02	NA	---	---	6.87E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.60E-01	5.00E+00	---	**3E-02**	1.53E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	---	9.60E-02	1.00E+02	---	**1E-03**	9.15E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	2.10E+00	Y	---	4.20E-01	9.77E+01	---	**4E-03**	4.01E-02	2.30E-05		**9E-07**
ETHYL ACETATE	141-78-6	7.60E+00	Y	---	1.52E+00	7.00E+01	---	**2E-02**	1.45E-01	-		**---**
ETHYLBENZENE	100-41-4	9.50E-01	Y	---	1.90E-01	1.00E+03	---	**2E-04**	1.81E-02	2.50E-06		**5E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	9.50E-01	N	---	1.90E-01	NA	---	---	1.81E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	5.20E+02	Y	---	1.04E+02	2.00E+02	---	**5E-01**	9.92E+00	-		**---**
M,P-XYLENE	108-38-3	3.00E+00	Y	---	6.00E-01	1.00E+02	---	**6E-03**	5.72E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	9.40E-01	Y	---	1.88E-01	6.00E+02	---	**3E-04**	1.79E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	8.30E-02	Y	---	1.66E-02	3.00E+00	---	**6E-03**	1.58E-03	3.40E-05		**5E-08**
O-XYLENE	95-47-6	9.10E-01	Y	---	1.82E-01	1.00E+02	---	**2E-03**	1.74E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.02E+02	Y	---	8.04E+01	4.00E+01	---	**2E+00**	7.67E+00	2.60E-07		**2E-06**
TRICHLOROETHENE	79-01-6	6.00E-02	Y	---	1.20E-02	2.00E+00	---	**6E-03**	1.14E-03	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	1.83E+00	Y	---	3.66E-01	2.00E+02	---	**2E-03**	3.49E-02	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.30E-02	8.00E+01	---	**2E-04**	1.24E-03	4.40E-06	M	**5E-09**

			HI$_{child}$	**HI$_{adult}$**	**Risk$_{lifetime}$**
Indoor Worker	**0051H**	**Total Inhalation**	**---**	**3E+00**	**1E-05**
		Based on NDs only	**0E+00**	**7E-01**	**8E-06**
		Based on Detects only	**#VALUE!**	**3E+00**	**4E-06**
		Site-related only	**0E+00**	**2E+00**	**2E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0051H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.40E-01	NA	NA	NA	1.79E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	6.00E-02	NA	NA	NA	1.14E-03	1.0E-06	kidney	---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	6.00E-02	NA		1.14E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	1.24E-03	4.4E-06		---	---	---	5E-09	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0052H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.90E+00	Y	---	3.80E-01	4.00E+01	---	**1E-02**	3.62E-02	2.60E-07		**9E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	4.77E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0052H**	**Total Inhalation**	---	**3E-02**	**3E-08**
		Based on NDs only	**0E+00**	**3E-02**	**2E-08**
		Based on Detects only	**#VALUE!**	**9E-03**	**9E-09**
		Site-related only	**0E+00**	**3E-02**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0052H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	4.77E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		4.77E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0053H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.03E-01	NA	---	---	9.81E-03	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	1.90E-01	Y	---	3.80E-02	2.00E+00	---	**2E-02**	3.62E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	2.10E-01	N	---	4.20E-02	3.00E+01	---	**1E-03**	4.01E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.45E+00	N	---	2.90E-01	2.00E+00	---	**1E-01**	2.77E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	6.10E-01	Y	---	1.22E-01	6.00E+01	---	**2E-03**	1.16E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	7.60E-02	Y	---	1.52E-02	7.00E+00	---	**2E-03**	1.45E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	---	7.40E-02	6.00E+01	---	**1E-03**	7.06E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	---	9.01E-02	8.00E+02	---	**1E-04**	8.59E-03	1.10E-05		**9E-08**
BENZENE	71-43-2	9.60E-01	Y	---	1.92E-01	3.00E+01	---	**6E-03**	1.83E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	---	2.20E-02	1.00E+00	---	**2E-02**	2.10E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.00E-01	NA	---	---	9.58E-03	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	3.70E-01	N	---	7.40E-02	5.00E+00	---	**1E-02**	7.06E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	---	9.20E-02	1.00E+02	---	**9E-04**	8.77E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	8.78E-01	Y	---	1.76E-01	9.77E+01	---	**2E-03**	1.68E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	3.13E+00	Y	---	6.27E-01	7.00E+01	---	**9E-03**	5.98E-02	-		---
ETHYLBENZENE	100-41-4	3.30E+00	Y	---	6.60E-01	1.00E+03	---	**7E-04**	6.29E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.95E+00	N	---	3.90E-01	NA	---	---	3.72E-02	2.20E-05		**8E-07**
ISOPROPYL ALCOHOL	67-63-0	5.40E+00	Y	---	1.08E+00	2.00E+02	---	**5E-03**	1.03E-01	-		---
M,P-XYLENE	108-38-3	2.30E+00	Y	---	4.60E-01	1.00E+02	---	**5E-03**	4.39E-02	-		---
METHYLENE CHLORIDE	75-09-2	8.33E-01	Y	---	1.67E-01	6.00E+02	---	**3E-04**	1.59E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	3.60E-02	Y	---	7.20E-03	3.00E+00	---	**2E-03**	6.87E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	8.25E-01	Y	---	1.65E-01	1.00E+02	---	**2E-03**	1.57E-02	-		---
TETRACHLOROETHENE	127-18-4	2.41E+01	Y	---	4.82E+00	4.00E+01	---	**1E-01**	4.60E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	4.70E-01	Y	---	9.40E-02	2.00E+00	---	**5E-02**	8.96E-03	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	---	5.30E-02	2.00E+02	---	**3E-04**	5.05E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.30E-02	8.00E+01	---	**2E-04**	1.24E-03	4.40E-06	M	**5E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0053H**	**Total Inhalation**	---	**9E-01**	**1E-05**
		Based on NDs only	**0E+00**	**6E-01**	**9E-06**
		Based on Detects only	**#VALUE!**	**2E-01**	**1E-06**
		Site-related only	**0E+00**	**2E-01**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0053H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.33E-01	NA	NA	NA	1.59E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	4.70E-01	NA	NA	NA	8.96E-03	1.0E-06	kidney	---	---	---	9E-09	**9E-09**
TRICHLOROETHENE	79-01-6	4.70E-01	NA		8.96E-03		3.1E-06	NHL+liver	---		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	1.24E-03	4.4E-06		---	---	---	5E-09	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0054H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	2.14E+01	Y	---	4.28E+00	4.00E+01	---	**1E-01**	4.08E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	9.30E+00	Y	---	1.86E+00	2.00E+00	---	**9E-01**	1.77E-01	4.10E-06	M	**7E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0054H**	**Total Inhalation**	---	**1E+00**	**8E-07**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**#VALUE!**	**1E+00**	**8E-07**
		Site-related only	**0E+00**	**1E+00**	**8E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0054H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	9.30E+00	NA	NA	NA	1.77E-01	1.0E-06	kidney	---	---	---	2E-07	**2E-07**
TRICHLOROETHENE	79-01-6	9.30E+00	NA		1.77E-01		3.1E-06	NHL+liver	---		5E-07		**5E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0055H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime	
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02	

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.50E+00	Y	---	3.00E-01	4.00E+01	---	**8E-03**	2.86E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	4.77E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0055H**	**Total Inhalation**	---	**3E-02**	**3E-08**
		Based on NDs only	**0E+00**	**3E-02**	**2E-08**
		Based on Detects only	**#VALUE!**	**8E-03**	**7E-09**
		Site-related only	**0E+00**	**3E-02**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0055H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	4.77E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		4.77E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0056H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	6.90E+00	Y	---	1.38E+00	4.00E+01	---	**3E-02**	1.32E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	4.77E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0056H**	**Total Inhalation**	---	**6E-02**	**5E-08**
		Based on NDs only	**0E+00**	**3E-02**	**2E-08**
		Based on Detects only	**#VALUE!**	**3E-02**	**3E-08**
		Site-related only	**0E+00**	**6E-02**	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0056H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	4.77E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		4.77E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0057H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime	
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02	

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	6.68E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	4.77E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0057H**	**Total Inhalation**	---	**3E-02**	**2E-08**
		Based on NDs only	**0E+00**	**3E-02**	**2E-08**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0057H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	4.77E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		4.77E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0058H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime	
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02	

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	6.68E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	4.77E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0058H**	**Total Inhalation**	---	**3E-02**	**2E-08**
		Based on NDs only	**0E+00**	**3E-02**	**2E-08**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0058H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	4.77E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		4.77E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0059H**

Pathway:
Inhalation of Indoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)		1.91E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	7.00E-02	N	---	1.40E-02	NA	---	---	1.34E-03	5.80E-05		**8E-08**
1,3-BUTADIENE	106-99-0	3.60E-01	Y	---	7.20E-02	2.00E+00	---	**4E-02**	6.87E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	4.70E+00	Y	---	9.40E-01	3.00E+01	---	**3E-02**	8.96E-02	5.00E-06		**4E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.95E-02	N	---	9.90E-03	2.00E-01	---	**5E-02**	9.44E-04	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.00E+00	Y	---	8.00E-01	2.00E+00	---	**4E-01**	7.63E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.10E-01	Y	---	1.22E-01	6.00E+01	---	**2E-03**	1.16E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.60E-02	N	---	7.20E-03	9.00E+00	---	**8E-04**	6.87E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	8.60E-02	Y	---	1.72E-02	7.00E+00	---	**2E-03**	1.64E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	1.60E+00	Y	---	3.20E-01	4.00E+00	---	**8E-02**	3.05E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.45E-01	N	---	2.90E-02	6.00E+01	---	**5E-04**	2.77E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.80E-01	Y	---	3.60E-02	8.00E+02	---	**5E-05**	3.43E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	1.90E+00	Y	---	3.80E-01	3.00E+01	---	**1E-02**	3.62E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	1.50E-01	N	---	3.00E-02	1.00E+00	---	**3E-02**	2.86E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	2.30E-01	Y	---	4.60E-02	NA	---	---	4.39E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	5.00E-01	N	---	1.00E-01	5.00E+00	---	**2E-02**	9.54E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	1.50E+00	Y	---	3.00E-01	1.00E+02	---	**3E-03**	2.86E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.70E+00	Y	---	3.40E-01	9.77E+01	---	**3E-03**	3.24E-02	2.30E-05		**7E-07**
ETHYL ACETATE	141-78-6	3.10E+00	Y	---	6.20E-01	7.00E+01	---	**9E-03**	5.91E-02	-		**---**
ETHYLBENZENE	100-41-4	7.40E-01	Y	---	1.48E-01	1.00E+03	---	**1E-04**	1.41E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.40E+00	Y	---	8.80E-01	NA	---	---	8.39E-02	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	8.00E+01	Y	---	1.60E+01	2.00E+02	---	**8E-02**	1.53E+00	-		**---**
M,P-XYLENE	108-38-3	3.00E+00	Y	---	6.00E-01	1.00E+02	---	**6E-03**	5.72E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	9.10E-01	Y	---	1.82E-01	6.00E+02	---	**3E-04**	1.74E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	1.00E-01	Y	---	2.00E-02	3.00E+00	---	**7E-03**	1.91E-03	3.40E-05		**6E-08**
O-XYLENE	95-47-6	1.30E+00	Y	---	2.60E-01	1.00E+02	---	**3E-03**	2.48E-02	-		**---**
TETRACHLOROETHENE	127-18-4	2.20E+02	Y	---	4.41E+01	4.00E+01	---	**1E+00**	4.20E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	1.24E+01	Y	---	2.47E+00	2.00E+00	---	**1E+00**	2.36E-01	4.10E-06	M	**1E-06**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	2.90E-02	N	---	5.80E-03	8.00E+01	---	**7E-05**	5.53E-04	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0059H**	**Total Inhalation**	**---**	**3E+00**	**7E-06**
		Based on NDs only	**0E+00**	**1E-01**	**6E-07**
		Based on Detects only	**#VALUE!**	**3E+00**	**6E-06**
		Site-related only	**0E+00**	**2E+00**	**3E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0059H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.10E-01	NA	NA	NA	1.74E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	1.24E+01	NA	NA	NA	2.36E-01	1.0E-06	kidney	---	---	---	2E-07	**2E-07**
TRICHLOROETHENE	79-01-6	1.24E+01	NA		2.36E-01		3.1E-06	NHL+liver	---		7E-07		**7E-07**
VINYL CHLORIDE	75-01-4	2.90E-02	NA	NA	NA	5.53E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0060H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	6.68E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	4.77E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0060H**	**Total Inhalation**	---	**3E-02**	**2E-08**
		Based on NDs only	**0E+00**	**3E-02**	**2E-08**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0060H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	4.77E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		4.77E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0061H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	6.68E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	4.77E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0061H**	**Total Inhalation**	---	**3E-02**	**2E-08**
		Based on NDs only	**0E+00**	**3E-02**	**2E-08**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0061H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	4.77E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		4.77E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0062H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	---	2.10E-03	NA	---	---	2.00E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	4.95E-02	N	---	9.90E-03	2.00E+00	---	**5E-03**	9.44E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	7.00E-02	N	---	1.40E-02	3.00E+01	---	**5E-04**	1.34E-03	5.00E-06		**7E-09**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	---	1.40E-03	2.00E-01	---	**7E-03**	1.34E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.85E-01	N	---	9.70E-02	2.00E+00	---	**5E-02**	9.25E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.40E-01	Y	---	4.80E-02	6.00E+01	---	**8E-04**	4.58E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	---	6.60E-03	9.00E+00	---	**7E-04**	6.29E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	1.70E-01	Y	---	3.40E-02	7.00E+00	---	**5E-03**	3.24E-03	2.60E-05		**8E-08**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	---	1.80E-02	4.00E+00	---	**5E-03**	1.72E-03	3.70E-06		**6E-09**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	---	1.20E-02	6.00E+01	---	**2E-04**	1.14E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	---	1.00E-02	8.00E+02	---	**1E-05**	9.54E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	1.00E+00	Y	---	2.00E-01	3.00E+01	---	**7E-03**	1.91E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	---	1.70E-02	1.00E+00	---	**2E-02**	1.62E-03	4.90E-05		**8E-08**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	---	2.50E-02	NA	---	---	2.38E-03	3.70E-05		**9E-08**
BROMOMETHANE	74-83-9	6.50E-01	N	---	1.30E-01	5.00E+00	---	**3E-02**	1.24E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	---	8.00E-02	1.00E+02	---	**8E-04**	7.63E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	3.40E-01	Y	---	6.80E-02	9.77E+01	---	**7E-04**	6.48E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	3.00E-01	Y	---	6.00E-02	1.00E+03	---	**6E-05**	5.72E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	---	1.30E-01	NA	---	---	1.24E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	1.80E+01	Y	---	3.60E+00	2.00E+02	---	**2E-02**	3.43E-01	-		---
M,P-XYLENE	108-38-3	1.10E+00	Y	---	2.20E-01	1.00E+02	---	**2E-03**	2.10E-02	-		---
METHYLENE CHLORIDE	75-09-2	2.65E-01	N	---	5.30E-02	6.00E+02	---	**9E-05**	5.05E-03	1.00E-08	M	**5E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.60E-01	Y	---	7.20E-02	1.00E+02	---	**7E-04**	6.87E-03	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	Y	---	1.00E-02	4.00E+01	---	**3E-04**	9.54E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	4.77E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.00E-03	N	---	1.60E-03	8.00E+01	---	**2E-05**	1.53E-04	4.40E-06	M	**7E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0062H**	**Total Inhalation**	---	**2E-01**	**1E-06**
		Based on NDs only	**0E+00**	**1E-01**	**9E-07**
		Based on Detects only	**#VALUE!**	**4E-02**	**4E-07**
		Site-related only	**0E+00**	**3E-02**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0062H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.65E-01	NA	NA	NA	5.05E-03	1.0E-08		---	---	---	5E-11	**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	4.77E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		4.77E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	8.00E-03	NA	NA	NA	1.53E-04	4.4E-06		---	---	---	7E-10	**7E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0063H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime	
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02	

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	4.00E+00	Y	---	8.00E-01	4.00E+01	---	**2E-02**	7.63E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	4.77E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0063H**	**Total Inhalation**	---	**5E-02**	**4E-08**
		Based on NDs only	**0E+00**	**3E-02**	**2E-08**
		Based on Detects only	**#VALUE!**	**2E-02**	**2E-08**
		Site-related only	**0E+00**	**5E-02**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0063H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	4.77E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		4.77E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0064H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.03E-01	NA	---	---	9.81E-03	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.32E-02	2.00E+00	---	**2E-02**	3.16E-03	3.00E-05		**9E-08**
1,4-DIOXANE	123-91-1	5.10E-01	Y	---	1.02E-01	3.00E+01	---	**3E-03**	9.73E-03	5.00E-06		**5E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	8.20E-02	2.00E-01	---	**4E-01**	7.82E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.11E-01	2.00E+00	---	**2E-01**	2.97E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E-01	Y	---	2.40E-02	6.00E+01	---	**4E-04**	2.29E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.20E-01	9.00E+00	---	**1E-02**	1.14E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	7.50E-02	Y	---	1.50E-02	7.00E+00	---	**2E-03**	1.43E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	7.30E-02	4.00E+00	---	**2E-02**	6.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	---	1.50E-01	6.00E+01	---	**3E-03**	1.43E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	---	1.80E-01	8.00E+02	---	**2E-04**	1.72E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	6.07E-01	Y	---	1.21E-01	3.00E+01	---	**4E-03**	1.16E-02	7.80E-06		**9E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	1.91E-01	1.00E+00	---	**2E-01**	1.83E-02	4.90E-05		**9E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.00E-01	NA	---	---	9.58E-03	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	5.50E-01	N	---	1.10E-01	5.00E+00	---	**2E-02**	1.05E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	---	8.00E-02	1.00E+02	---	**8E-04**	7.63E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	7.60E-01	Y	---	1.52E-01	9.77E+01	---	**2E-03**	1.45E-02	2.30E-05		**3E-07**
ETHYL ACETATE	141-78-6	2.90E+00	Y	---	5.80E-01	7.00E+01	---	**8E-03**	5.53E-02	-		---
ETHYLBENZENE	100-41-4	1.70E+00	Y	---	3.40E-01	1.00E+03	---	**3E-04**	3.24E-02	2.50E-06		**8E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.20E-01	NA	---	---	3.05E-02	2.20E-05		**7E-07**
ISOPROPYL ALCOHOL	67-63-0	1.00E+01	Y	---	2.00E+00	2.00E+02	---	**1E-02**	1.91E-01	-		---
M,P-XYLENE	108-38-3	5.65E+00	Y	---	1.13E+00	1.00E+02	---	**1E-02**	1.08E-01	-		---
METHYLENE CHLORIDE	75-09-2	1.10E+00	Y	---	2.20E-01	6.00E+02	---	**4E-04**	2.10E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.52E+00	Y	---	3.04E-01	1.00E+02	---	**3E-03**	2.90E-02	-		---
TETRACHLOROETHENE	127-18-4	1.30E+01	Y	---	2.60E+00	4.00E+01	---	**7E-02**	2.48E-01	2.60E-07		**6E-08**
TRICHLOROETHENE	79-01-6	1.50E-01	Y	---	3.00E-02	2.00E+00	---	**2E-02**	2.86E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	---	7.04E-02	2.00E+02	---	**4E-04**	6.71E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.30E-02	8.00E+01	---	**2E-04**	1.24E-03	4.40E-06	M	**5E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0064H**	**Total Inhalation**	---	**1E+00**	**1E-05**
		Based on NDs only	**0E+00**	**8E-01**	**1E-05**
		Based on Detects only	**#VALUE!**	**1E-01**	**7E-07**
		Site-related only	**0E+00**	**8E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0064H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.10E+00	NA	NA	NA	2.10E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	1.50E-01	NA	NA	NA	2.86E-03	1.0E-06	kidney	---	---	---	3E-09	**3E-09**
TRICHLOROETHENE	79-01-6	1.50E-01	NA		2.86E-03		3.1E-06	NHL+liver	---		9E-09		**9E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	1.24E-03	4.4E-06		---	---	---	5E-09	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0065H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.50E-02	N	---	1.10E-02	NA	---	---	1.05E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	6.00E-02	N	---	1.20E-02	2.00E+00	---	**6E-03**	1.14E-03	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	2.35E-01	N	---	4.70E-02	3.00E+01	---	**2E-03**	4.48E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.05E-02	N	---	8.10E-03	2.00E-01	---	**4E-02**	7.72E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.65E+00	N	---	3.30E-01	2.00E+00	---	**2E-01**	3.15E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.50E-01	Y	---	9.00E-02	6.00E+01	---	**2E-03**	8.58E-03	-		---
1,2-DIBROMOETHANE	106-93-4	2.95E-02	N	---	5.90E-03	9.00E+00	---	**7E-04**	5.63E-04	6.00E-04		**3E-07**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	---	1.54E-02	7.00E+00	---	**2E-03**	1.47E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	1.35E-01	N	---	2.70E-02	4.00E+00	---	**7E-03**	2.57E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	1.20E-01	N	---	2.40E-02	6.00E+01	---	**4E-04**	2.29E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	N	---	1.70E-02	8.00E+02	---	**2E-05**	1.62E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	8.60E-01	Y	---	1.72E-01	3.00E+01	---	**6E-03**	1.64E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	1.25E-01	N	---	2.50E-02	1.00E+00	---	**3E-02**	2.38E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	2.95E-01	N	---	5.90E-02	NA	---	---	5.63E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	4.15E-01	N	---	8.30E-02	5.00E+00	---	**2E-02**	7.91E-03	-		---
CARBON TETRACHLORIDE	56-23-5	5.40E-01	Y	---	1.08E-01	1.00E+02	---	**1E-03**	1.03E-02	6.00E-06		**6E-08**
CHLOROFORM	67-66-3	6.70E-01	Y	---	1.34E-01	9.77E+01	---	**1E-03**	1.28E-02	2.30E-05		**3E-07**
ETHYL ACETATE	141-78-6	2.00E+00	Y	---	4.00E-01	7.00E+01	---	**6E-03**	3.81E-02	-		---
ETHYLBENZENE	100-41-4	3.60E-01	Y	---	7.20E-02	1.00E+03	---	**7E-05**	6.87E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	2.20E+00	N	---	4.40E-01	NA	---	---	4.20E-02	2.20E-05		**9E-07**
ISOPROPYL ALCOHOL	67-63-0	1.00E+01	Y	---	2.00E+00	2.00E+02	---	**1E-02**	1.91E-01	-		---
M,P-XYLENE	108-38-3	1.40E+00	Y	---	2.80E-01	1.00E+02	---	**3E-03**	2.67E-02	-		---
METHYLENE CHLORIDE	75-09-2	6.20E-01	Y	---	1.24E-01	6.00E+02	---	**2E-04**	1.18E-02	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	4.50E-02	Y	---	9.00E-03	3.00E+00	---	**3E-03**	8.58E-04	3.40E-05		**3E-08**
O-XYLENE	95-47-6	4.60E-01	Y	---	9.20E-02	1.00E+02	---	**9E-04**	8.77E-03	-		---
TETRACHLOROETHENE	127-18-4	1.60E-01	Y	---	3.20E-02	4.00E+01	---	**8E-04**	3.05E-03	2.60E-07		**8E-10**
TRICHLOROETHENE	79-01-6	9.00E-02	N	---	1.80E-02	2.00E+00	---	**9E-03**	1.72E-03	4.10E-06	M	**7E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	2.40E-02	N	---	4.80E-03	8.00E+01	---	**6E-05**	4.58E-04	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0065H**	**Total Inhalation**	---	**3E-01**	**2E-06**
		Based on NDs only	**0E+00**	**3E-01**	**2E-06**
		Based on Detects only	**#VALUE!**	**4E-02**	**6E-07**
		Site-related only	**0E+00**	**1E-02**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0065H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.20E-01	NA	NA	NA	1.18E-02	1.0E-08		---	---	---	1E-10	**1E-10**
TRICHLOROETHENE	79-01-6	9.00E-02	NA	NA	NA	1.72E-03	1.0E-06	kidney	---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	NA		1.72E-03		3.1E-06	NHL+liver	---		5E-09		**5E-09**
VINYL CHLORIDE	75-01-4	2.40E-02	NA	NA	NA	4.58E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0066H**

Pathway:
Inhalation of Indoor Air

			CTE child	CTE adult			CTE lifetime		
		TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02		

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.25E-02	N	---	4.50E-03	NA	---	---	4.29E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	1.00E-01	N	---	2.00E-02	2.00E+00	---	**1E-02**	1.91E-03	3.00E-05		**6E-08**
1,4-DIOXANE	123-91-1	4.30E-01	Y	---	8.60E-02	3.00E+01	---	**3E-03**	8.20E-03	5.00E-06		**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.10E-02	N	---	4.20E-03	2.00E-01	---	**2E-02**	4.01E-04	1.60E-05		**6E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	---	1.40E-01	2.00E+00	---	**7E-02**	1.34E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.30E-01	Y	---	8.60E-02	6.00E+01	---	**1E-03**	8.20E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	---	1.50E-02	9.00E+00	---	**2E-03**	1.43E-03	6.00E-04		**9E-07**
1,2-DICHLOROETHANE	107-06-2	3.50E-01	Y	---	7.00E-02	7.00E+00	---	**1E-02**	6.68E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	---	2.10E-02	4.00E+00	---	**5E-03**	2.00E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	---	2.60E-02	6.00E+01	---	**4E-04**	2.48E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	N	---	1.70E-02	8.00E+02	---	**2E-05**	1.62E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	9.90E-01	Y	---	1.98E-01	3.00E+01	---	**7E-03**	1.89E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	2.50E-01	N	---	5.00E-02	1.00E+00	---	**5E-02**	4.77E-03	4.90E-05		**2E-07**
BROMODICHLOROMETHANE	75-27-4	2.55E-01	N	---	5.10E-02	NA	---	---	4.86E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	8.50E-01	N	---	1.70E-01	5.00E+00	---	**3E-02**	1.62E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	---	9.20E-02	1.00E+02	---	**9E-04**	8.77E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	6.30E-01	Y	---	1.26E-01	9.77E+01	---	**1E-03**	1.20E-02	2.30E-05		**3E-07**
ETHYL ACETATE	141-78-6	6.70E+00	Y	---	1.34E+00	7.00E+01	---	**2E-02**	1.28E-01	-		---
ETHYLBENZENE	100-41-4	5.10E-01	Y	---	1.02E-01	1.00E+03	---	**1E-04**	9.73E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	---	1.60E-01	NA	---	---	1.53E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	1.10E+01	Y	---	2.20E+00	2.00E+02	---	**1E-02**	2.10E-01	-		---
M,P-XYLENE	108-38-3	1.50E+00	Y	---	3.00E-01	1.00E+02	---	**3E-03**	2.86E-02	-		---
METHYLENE CHLORIDE	75-09-2	3.35E-01	N	---	6.70E-02	6.00E+02	---	**1E-04**	6.39E-03	1.00E-08	M	**6E-11**
NAPHTHALENE	91-20-3	2.55E-02	N	---	5.10E-03	3.00E+00	---	**2E-03**	4.86E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	3.70E-01	Y	---	7.40E-02	1.00E+02	---	**7E-04**	7.06E-03	-		---
TETRACHLOROETHENE	127-18-4	9.40E-02	Y	---	1.88E-02	4.00E+01	---	**5E-04**	1.79E-03	2.60E-07		**5E-10**
TRICHLOROETHENE	79-01-6	1.90E-01	Y	---	3.80E-02	2.00E+00	---	**2E-02**	3.62E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	7.00E-03	N	---	1.40E-03	8.00E+01	---	**2E-05**	1.34E-04	4.40E-06	M	**6E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0066H**	**Total Inhalation**	---	**3E-01**	**2E-06**
		Based on NDs only	**0E+00**	**2E-01**	**2E-06**
		Based on Detects only	**#VALUE!**	**8E-02**	**7E-07**
		Site-related only	**0E+00**	**2E-02**	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0066H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.35E-01	NA	NA	NA	6.39E-03	1.0E-08		---	---	---	6E-11	**6E-11**
TRICHLOROETHENE	79-01-6	1.90E-01	NA	NA	NA	3.62E-03	1.0E-06	kidney	---	---	---	4E-09	**4E-09**
TRICHLOROETHENE	79-01-6	1.90E-01	NA		3.62E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	7.00E-03	NA	NA	NA	1.34E-04	4.4E-06		---	---	---	6E-10	**6E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0069H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	3.00E-02	N	---	6.00E-03	NA	---	---	5.72E-04	5.80E-05		**3E-08**
1,3-BUTADIENE	106-99-0	1.35E-01	N	---	2.70E-02	2.00E+00	---	**1E-02**	2.57E-03	3.00E-05		**8E-08**
1,4-DIOXANE	123-91-1	2.90E-01	Y	---	5.80E-02	3.00E+01	---	**2E-03**	5.53E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.80E-02	N	---	5.60E-03	2.00E-01	---	**3E-02**	5.34E-04	1.60E-05		**9E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	9.00E-01	N	---	1.80E-01	2.00E+00	---	**9E-02**	1.72E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	8.30E-01	Y	---	1.66E-01	6.00E+01	---	**3E-03**	1.58E-02	-		---
1,2-DIBROMOETHANE	106-93-4	1.00E-01	N	---	2.00E-02	9.00E+00	---	**2E-03**	1.91E-03	6.00E-04		**1E-06**
1,2-DICHLOROETHANE	107-06-2	1.40E+00	Y	---	2.80E-01	7.00E+00	---	**4E-02**	2.67E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	1.40E-01	N	---	2.80E-02	4.00E+00	---	**7E-03**	2.67E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	1.70E-01	N	---	3.40E-02	6.00E+01	---	**6E-04**	3.24E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	Y	---	1.70E-02	8.00E+02	---	**2E-05**	1.62E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	8.40E-01	Y	---	1.68E-01	3.00E+01	---	**6E-03**	1.60E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	3.40E-01	N	---	6.80E-02	1.00E+00	---	**7E-02**	6.48E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	3.45E-01	N	---	6.90E-02	NA	---	---	6.58E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	1.15E+00	N	---	2.30E-01	5.00E+00	---	**5E-02**	2.19E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	---	8.80E-02	1.00E+02	---	**9E-04**	8.39E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	6.00E-01	Y	---	1.20E-01	9.77E+01	---	**1E-03**	1.14E-02	2.30E-05		**3E-07**
ETHYL ACETATE	141-78-6	1.10E+00	Y	---	2.20E-01	7.00E+01	---	**3E-03**	2.10E-02	-		---
ETHYLBENZENE	100-41-4	2.30E-01	Y	---	4.60E-02	1.00E+03	---	**5E-05**	4.39E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.10E+00	N	---	2.20E-01	NA	---	---	2.10E-02	2.20E-05		**5E-07**
ISOPROPYL ALCOHOL	67-63-0	4.60E+00	Y	---	9.20E-01	2.00E+02	---	**5E-03**	8.77E-02	-		---
M,P-XYLENE	108-38-3	8.70E-01	Y	---	1.74E-01	1.00E+02	---	**2E-03**	1.66E-02	-		---
METHYLENE CHLORIDE	75-09-2	7.90E-01	Y	---	1.58E-01	6.00E+02	---	**3E-04**	1.51E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	2.70E-02	N	---	5.40E-03	3.00E+00	---	**2E-03**	5.15E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	3.60E-01	Y	---	7.20E-02	1.00E+02	---	**7E-04**	6.87E-03	-		---
TETRACHLOROETHENE	127-18-4	3.40E-01	Y	---	6.80E-02	4.00E+01	---	**2E-03**	6.48E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	1.30E-01	Y	---	2.60E-02	2.00E+00	---	**1E-02**	2.48E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	9.00E-03	N	---	1.80E-03	8.00E+01	---	**2E-05**	1.72E-04	4.40E-06	M	**8E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0069H**	**Total Inhalation**	---	**3E-01**	**4E-06**
		Based on NDs only	**0E+00**	**3E-01**	**2E-06**
		Based on Detects only	**#VALUE!**	**8E-02**	**1E-06**
		Site-related only	**0E+00**	**2E-02**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0069H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.90E-01	NA	NA	NA	1.51E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	1.30E-01	NA	NA	NA	2.48E-03	1.0E-06	kidney	---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	1.30E-01	NA		2.48E-03		3.1E-06	NHL+liver	---		8E-09		**8E-09**
VINYL CHLORIDE	75-01-4	9.00E-03	NA	NA	NA	1.72E-04	4.4E-06		---	---	---	8E-10	**8E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0071H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	---	4.30E-03	NA	---	---	4.10E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	9.50E-02	N	---	1.90E-02	2.00E+00	---	**1E-02**	1.81E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	6.00E-02	N	---	1.20E-02	3.00E+01	---	**4E-04**	1.14E-03	5.00E-06		**6E-09**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	---	4.00E-03	2.00E-01	---	**2E-02**	3.81E-04	1.60E-05		**6E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	---	1.30E-01	2.00E+00	---	**7E-02**	1.24E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E-01	N	---	2.80E-02	6.00E+01	---	**5E-04**	2.67E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	---	1.40E-02	9.00E+00	---	**2E-03**	1.34E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	8.00E-01	Y	---	1.60E-01	7.00E+00	---	**2E-02**	1.53E-02	2.60E-05		**4E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	---	2.00E-02	4.00E+00	---	**5E-03**	1.91E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	1.20E-01	N	---	2.40E-02	6.00E+01	---	**4E-04**	2.29E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	---	1.60E-02	8.00E+02	---	**2E-05**	1.53E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	6.50E-01	Y	---	1.30E-01	3.00E+01	---	**4E-03**	1.24E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	2.40E-01	N	---	4.80E-02	1.00E+00	---	**5E-02**	4.58E-03	4.90E-05		**2E-07**
BROMODICHLOROMETHANE	75-27-4	2.45E-01	N	---	4.90E-02	NA	---	---	4.67E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.60E-01	5.00E+00	---	**3E-02**	1.53E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	---	9.20E-02	1.00E+02	---	**9E-04**	8.77E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	1.60E+00	Y	---	3.20E-01	9.77E+01	---	**3E-03**	3.05E-02	2.30E-05		**7E-07**
ETHYL ACETATE	141-78-6	2.60E+01	Y	---	5.20E+00	7.00E+01	---	**7E-02**	4.96E-01	-		---
ETHYLBENZENE	100-41-4	3.00E-01	Y	---	6.00E-02	1.00E+03	---	**6E-05**	5.72E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	---	1.60E-01	NA	---	---	1.53E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	4.30E+00	Y	---	8.60E-01	2.00E+02	---	**4E-03**	8.20E-02	-		---
M,P-XYLENE	108-38-3	8.50E-01	Y	---	1.70E-01	1.00E+02	---	**2E-03**	1.62E-02	-		---
METHYLENE CHLORIDE	75-09-2	3.15E-01	N	---	6.30E-02	6.00E+02	---	**1E-04**	6.01E-03	1.00E-08	M	**6E-11**
NAPHTHALENE	91-20-3	2.75E-02	N	---	5.50E-03	3.00E+00	---	**2E-03**	5.24E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	3.20E-01	Y	---	6.40E-02	1.00E+02	---	**6E-04**	6.10E-03	-		---
TETRACHLOROETHENE	127-18-4	3.30E-01	Y	---	6.60E-02	4.00E+01	---	**2E-03**	6.29E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	---	1.00E-02	2.00E+00	---	**5E-03**	9.54E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	6.50E-03	N	---	1.30E-03	8.00E+01	---	**2E-05**	1.24E-04	4.40E-06	M	**5E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0071H**	**Total Inhalation**	---	**3E-01**	**3E-06**
		Based on NDs only	**0E+00**	**2E-01**	**2E-06**
		Based on Detects only	**#VALUE!**	**1E-01**	**1E-06**
		Site-related only	**0E+00**	**7E-03**	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0071H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.15E-01	NA	NA	NA	6.01E-03	1.0E-08		---	---	---	6E-11	**6E-11**
TRICHLOROETHENE	79-01-6	5.00E-02	NA	NA	NA	9.54E-04	1.0E-06	kidney	---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	NA		9.54E-04		3.1E-06	NHL+liver	---		3E-09		**3E-09**
VINYL CHLORIDE	75-01-4	6.50E-03	NA	NA	NA	1.24E-04	4.4E-06		---	---	---	5E-10	**5E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0072H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.90E-02	N	---	5.80E-03	NA	---	---	5.53E-04	5.80E-05		**3E-08**
1,3-BUTADIENE	106-99-0	6.00E-02	N	---	1.20E-02	2.00E+00	---	**6E-03**	1.14E-03	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	1.00E-01	N	---	2.00E-02	3.00E+01	---	**7E-04**	1.91E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.40E-02	N	---	2.80E-03	2.00E-01	---	**1E-02**	2.67E-04	1.60E-05		**4E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	---	1.20E-01	2.00E+00	---	**6E-02**	1.14E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	2.70E-01	Y	---	5.40E-02	6.00E+01	---	**9E-04**	5.15E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	5.00E-02	N	---	1.00E-02	9.00E+00	---	**1E-03**	9.54E-04	6.00E-04		**6E-07**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	---	2.20E-02	7.00E+00	---	**3E-03**	2.10E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	1.15E-01	N	---	2.30E-02	4.00E+00	---	**6E-03**	2.19E-03	3.70E-06		**8E-09**
1,3,5-Trimethylbenzene	108-67-8	9.50E-02	N	---	1.90E-02	6.00E+01	---	**3E-04**	1.81E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	---	1.10E-02	8.00E+02	---	**1E-05**	1.05E-03	1.10E-05		**1E-08**
BENZENE	71-43-2	4.00E-01	Y	---	8.00E-02	3.00E+01	---	**3E-03**	7.63E-03	7.80E-06		**6E-08**
BENZYL CHLORIDE	100-44-7	1.30E-01	N	---	2.60E-02	1.00E+00	---	**3E-02**	2.48E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	---	2.60E-02	NA	---	---	2.48E-03	3.70E-05		**9E-08**
BROMOMETHANE	74-83-9	7.00E-01	N	---	1.40E-01	5.00E+00	---	**3E-02**	1.34E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	---	7.60E-02	1.00E+02	---	**8E-04**	7.25E-03	6.00E-06		**4E-08**
CHLOROFORM	67-66-3	2.90E-01	Y	---	5.80E-02	9.77E+01	---	**6E-04**	5.53E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.10E-01	Y	---	4.20E-02	1.00E+03	---	**4E-05**	4.01E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.90E-01	N	---	9.80E-02	NA	---	---	9.35E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	3.10E+01	Y	---	6.20E+00	2.00E+02	---	**3E-02**	5.91E-01	-		**---**
M,P-XYLENE	108-38-3	6.80E-01	Y	---	1.36E-01	1.00E+02	---	**1E-03**	1.30E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	7.20E-01	Y	---	1.44E-01	6.00E+02	---	**2E-04**	1.37E-02	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.50E-01	Y	---	5.00E-02	1.00E+02	---	**5E-04**	4.77E-03	-		**---**
TETRACHLOROETHENE	127-18-4	2.40E-01	Y	---	4.80E-02	4.00E+01	---	**1E-03**	4.58E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.80E-02	Y	---	5.60E-03	2.00E+00	---	**3E-03**	5.34E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	4.60E-03	N	---	9.20E-04	8.00E+01	---	**1E-05**	8.77E-05	4.40E-06	M	**4E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0072H**	**Total Inhalation**	**---**	**2E-01**	**1E-06**
		Based on NDs only	**0E+00**	**1E-01**	**1E-06**
		Based on Detects only	**#VALUE!**	**5E-02**	**3E-07**
		Site-related only	**0E+00**	**5E-03**	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0072H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.20E-01	NA	NA	NA	1.37E-02	1.0E-08		---	---	---	1E-10	**1E-10**
TRICHLOROETHENE	79-01-6	2.80E-02	NA	NA	NA	5.34E-04	1.0E-06	kidney	---	---	---	5E-10	**5E-10**
TRICHLOROETHENE	79-01-6	2.80E-02	NA		5.34E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	4.60E-03	NA	NA	NA	8.77E-05	4.4E-06		---	---	---	4E-10	**4E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0076H**

Pathway:
Inhalation of Indoor Air

			CTE child	CTE adult			CTE lifetime			
		TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.25E-02	N	---	4.50E-03	NA	---	---	4.29E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	1.00E-01	N	---	2.00E-02	2.00E+00	---	**1E-02**	1.91E-03	3.00E-05		**6E-08**
1,4-DIOXANE	123-91-1	2.50E-01	Y	---	5.00E-02	3.00E+01	---	**2E-03**	4.77E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.10E-02	N	---	4.20E-03	2.00E-01	---	**2E-02**	4.01E-04	1.60E-05		**6E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	---	1.40E-01	2.00E+00	---	**7E-02**	1.34E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.70E+00	Y	---	3.40E-01	6.00E+01	---	**6E-03**	3.24E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	---	1.50E-02	9.00E+00	---	**2E-03**	1.43E-03	6.00E-04		**9E-07**
1,2-DICHLOROETHANE	107-06-2	1.20E-01	Y	---	2.40E-02	7.00E+00	---	**3E-03**	2.29E-03	2.60E-05		**6E-08**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	---	2.10E-02	4.00E+00	---	**5E-03**	2.00E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	4.10E-01	Y	---	8.20E-02	6.00E+01	---	**1E-03**	7.82E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	N	---	1.70E-02	8.00E+02	---	**2E-05**	1.62E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	3.40E+00	Y	---	6.80E-01	3.00E+01	---	**2E-02**	6.48E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	2.50E-01	N	---	5.00E-02	1.00E+00	---	**5E-02**	4.77E-03	4.90E-05		**2E-07**
BROMODICHLOROMETHANE	75-27-4	2.55E-01	N	---	5.10E-02	NA	---	---	4.86E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	8.50E-01	N	---	1.70E-01	5.00E+00	---	**3E-02**	1.62E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	---	9.20E-02	1.00E+02	---	**9E-04**	8.77E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	7.50E-01	Y	---	1.50E-01	9.77E+01	---	**2E-03**	1.43E-02	2.30E-05		**3E-07**
ETHYL ACETATE	141-78-6	4.90E+00	Y	---	9.80E-01	7.00E+01	---	**1E-02**	9.35E-02	-		---
ETHYLBENZENE	100-41-4	1.80E+00	Y	---	3.60E-01	1.00E+03	---	**4E-04**	3.43E-02	2.50E-06		**9E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	---	1.60E-01	NA	---	---	1.53E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	8.50E+00	Y	---	1.70E+00	2.00E+02	---	**9E-03**	1.62E-01	-		---
M,P-XYLENE	108-38-3	8.60E+00	Y	---	1.72E+00	1.00E+02	---	**2E-02**	1.64E-01	-		---
METHYLENE CHLORIDE	75-09-2	8.30E-01	Y	---	1.66E-01	6.00E+02	---	**3E-04**	1.58E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	2.90E-02	N	---	5.80E-03	3.00E+00	---	**2E-03**	5.53E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	2.20E+00	Y	---	4.40E-01	1.00E+02	---	**4E-03**	4.20E-02	-		---
TETRACHLOROETHENE	127-18-4	4.90E-02	Y	---	9.80E-03	4.00E+01	---	**2E-04**	9.35E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	N	---	1.00E-02	2.00E+00	---	**5E-03**	9.54E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	7.00E-03	N	---	1.40E-03	8.00E+01	---	**2E-05**	1.34E-04	4.40E-06	M	**6E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0076H**	**Total Inhalation**	---	**3E-01**	**3E-06**
		Based on NDs only	**0E+00**	**2E-01**	**2E-06**
		Based on Detects only	**#VALUE!**	**8E-02**	**1E-06**
		Site-related only	**0E+00**	**7E-03**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0076H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.30E-01	NA	NA	NA	1.58E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	NA	NA	NA	9.54E-04	1.0E-06	kidney	---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	NA		9.54E-04		3.1E-06	NHL+liver	---		3E-09		**3E-09**
VINYL CHLORIDE	75-01-4	7.00E-03	NA	NA	NA	1.34E-04	4.4E-06		---	---	---	6E-10	**6E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0091H**

Pathway:
Inhalation of Indoor Air

			CTE child	CTE adult			CTE lifetime			
		TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.20E-02	N	---	4.40E-03	NA	---	---	4.20E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	1.00E-01	N	---	2.00E-02	2.00E+00	---	**1E-02**	1.91E-03	3.00E-05		**6E-08**
1,4-DIOXANE	123-91-1	2.80E-01	Y	---	5.60E-02	3.00E+01	---	**2E-03**	5.34E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.05E-02	N	---	4.10E-03	2.00E-01	---	**2E-02**	3.91E-04	1.60E-05		**6E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	1.00E+00	N	---	2.00E-01	2.00E+00	---	**1E-01**	1.91E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.10E-01	Y	---	1.02E-01	6.00E+01	---	**2E-03**	9.73E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	---	1.40E-02	9.00E+00	---	**2E-03**	1.34E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	4.70E-01	Y	---	9.40E-02	7.00E+00	---	**1E-02**	8.96E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.10E-01	Y	---	2.20E-02	4.00E+00	---	**6E-03**	2.10E-03	3.70E-06		**8E-09**
1,3,5-Trimethylbenzene	108-67-8	1.25E-01	N	---	2.50E-02	6.00E+01	---	**4E-04**	2.38E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	1.30E-01	Y	---	2.60E-02	8.00E+02	---	**3E-05**	2.48E-03	1.10E-05		**3E-08**
BENZENE	71-43-2	8.30E-01	Y	---	1.66E-01	3.00E+01	---	**6E-03**	1.58E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	---	4.90E-02	1.00E+00	---	**5E-02**	4.67E-03	4.90E-05		**2E-07**
BROMODICHLOROMETHANE	75-27-4	6.80E-01	Y	---	1.36E-01	NA	---	---	1.30E-02	3.70E-05		**5E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.60E-01	5.00E+00	---	**3E-02**	1.53E-02	-		---
CARBON TETRACHLORIDE	56-23-5	7.70E-01	Y	---	1.54E-01	1.00E+02	---	**2E-03**	1.47E-02	6.00E-06		**9E-08**
CHLOROFORM	67-66-3	3.80E+00	Y	---	7.60E-01	9.77E+01	---	**8E-03**	7.25E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	8.20E+00	Y	---	1.64E+00	7.00E+01	---	**2E-02**	1.56E-01	-		---
ETHYLBENZENE	100-41-4	6.60E-01	Y	---	1.32E-01	1.00E+03	---	**1E-04**	1.26E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	---	1.60E-01	NA	---	---	1.53E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	5.60E+01	Y	---	1.12E+01	2.00E+02	---	**6E-02**	1.07E+00	-		---
M,P-XYLENE	108-38-3	1.90E+00	Y	---	3.80E-01	1.00E+02	---	**4E-03**	3.62E-02	-		---
METHYLENE CHLORIDE	75-09-2	1.10E+00	Y	---	2.20E-01	6.00E+02	---	**4E-04**	2.10E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	2.75E-02	N	---	5.50E-03	3.00E+00	---	**2E-03**	5.24E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	7.20E-01	Y	---	1.44E-01	1.00E+02	---	**1E-03**	1.37E-02	-		---
TETRACHLOROETHENE	127-18-4	1.80E+01	Y	---	3.60E+00	4.00E+01	---	**9E-02**	3.43E-01	2.60E-07		**9E-08**
TRICHLOROETHENE	79-01-6	4.30E-01	Y	---	8.60E-02	2.00E+00	---	**4E-02**	8.20E-03	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	6.50E-03	N	---	1.30E-03	8.00E+01	---	**2E-05**	1.24E-04	4.40E-06	M	**5E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0091H**	**Total Inhalation**	---	**5E-01**	**4E-06**
		Based on NDs only	**0E+00**	**2E-01**	**1E-06**
		Based on Detects only	**#VALUE!**	**3E-01**	**3E-06**
		Site-related only	**0E+00**	**1E-01**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0091H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.10E+00	NA	NA	NA	2.10E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	4.30E-01	NA	NA	NA	8.20E-03	1.0E-06	kidney	---	---	---	8E-09	**8E-09**
TRICHLOROETHENE	79-01-6	4.30E-01	NA		8.20E-03		3.1E-06	NHL+liver	---		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	6.50E-03	NA	NA	NA	1.24E-04	4.4E-06		---	---	---	5E-10	**5E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0098H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	---	4.30E-03	NA	---	---	4.10E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	1.00E-01	N	---	2.00E-02	2.00E+00	---	**1E-02**	1.91E-03	3.00E-05		**6E-08**
1,4-DIOXANE	123-91-1	1.80E-01	Y	---	3.60E-02	3.00E+01	---	**1E-03**	3.43E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	---	4.00E-03	2.00E-01	---	**2E-02**	3.81E-04	1.60E-05		**6E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	---	1.30E-01	2.00E+00	---	**7E-02**	1.24E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.30E+00	Y	---	2.60E-01	6.00E+01	---	**4E-03**	2.48E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	---	1.40E-02	9.00E+00	---	**2E-03**	1.34E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	9.10E-02	Y	---	1.82E-02	7.00E+00	---	**3E-03**	1.74E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	---	2.00E-02	4.00E+00	---	**5E-03**	1.91E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	3.30E-01	Y	---	6.60E-02	6.00E+01	---	**1E-03**	6.29E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	1.30E+00	Y	---	2.60E-01	8.00E+02	---	**3E-04**	2.48E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	5.30E+00	Y	---	1.06E+00	3.00E+01	---	**4E-02**	1.01E-01	7.80E-06		**8E-07**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	---	4.90E-02	1.00E+00	---	**5E-02**	4.67E-03	4.90E-05		**2E-07**
BROMODICHLOROMETHANE	75-27-4	2.45E-01	N	---	4.90E-02	NA	---	---	4.67E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.60E-01	5.00E+00	---	**3E-02**	1.53E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	---	9.00E-02	1.00E+02	---	**9E-04**	8.58E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	4.60E-01	Y	---	9.20E-02	9.77E+01	---	**9E-04**	8.77E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	1.50E+00	Y	---	3.00E-01	7.00E+01	---	**4E-03**	2.86E-02	-		---
ETHYLBENZENE	100-41-4	3.00E+00	Y	---	6.00E-01	1.00E+03	---	**6E-04**	5.72E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	---	1.60E-01	NA	---	---	1.53E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	5.40E+00	Y	---	1.08E+00	2.00E+02	---	**5E-03**	1.03E-01	-		---
M,P-XYLENE	108-38-3	1.30E+01	Y	---	2.60E+00	1.00E+02	---	**3E-02**	2.48E-01	-		---
METHYLENE CHLORIDE	75-09-2	4.55E-01	N	---	9.10E-02	6.00E+02	---	**2E-04**	8.68E-03	1.00E-08	M	**9E-11**
NAPHTHALENE	91-20-3	2.50E-02	N	---	5.00E-03	3.00E+00	---	**2E-03**	4.77E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	3.50E+00	Y	---	7.00E-01	1.00E+02	---	**7E-03**	6.68E-02	-		---
TETRACHLOROETHENE	127-18-4	1.20E+00	Y	---	2.40E-01	4.00E+01	---	**6E-03**	2.29E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	7.80E-01	Y	---	1.56E-01	2.00E+00	---	**8E-02**	1.49E-02	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	6.50E-03	N	---	1.30E-03	8.00E+01	---	**2E-05**	1.24E-04	4.40E-06	M	**5E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0098H**	**Total Inhalation**	---	**4E-01**	**3E-06**
		Based on NDs only	**0E+00**	**2E-01**	**2E-06**
		Based on Detects only	**#VALUE!**	**2E-01**	**2E-06**
		Site-related only	**0E+00**	**9E-02**	**8E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0098H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.55E-01	NA	NA	NA	8.68E-03	1.0E-08		---	---	---	9E-11	**9E-11**
TRICHLOROETHENE	79-01-6	7.80E-01	NA	NA	NA	1.49E-02	1.0E-06	kidney	---	---	---	1E-08	**1E-08**
TRICHLOROETHENE	79-01-6	7.80E-01	NA		1.49E-02		3.1E-06	NHL+liver	---		5E-08		**5E-08**
VINYL CHLORIDE	75-01-4	6.50E-03	NA	NA	NA	1.24E-04	4.4E-06		---	---	---	5E-10	**5E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0102H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.50E-02	N	---	3.00E-03	NA	---	---	2.86E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	2.90E-02	N	---	5.80E-03	2.00E+00	---	**3E-03**	5.53E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	4.20E-01	Y	---	8.40E-02	3.00E+01	---	**3E-03**	8.01E-03	5.00E-06		**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.50E-03	N	---	1.70E-03	2.00E-01	---	**9E-03**	1.62E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	1.05E+00	N	---	2.10E-01	2.00E+00	---	**1E-01**	2.00E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	6.10E+00	Y	---	1.22E+00	6.00E+01	---	**2E-02**	1.16E-01	-		---
1,2-DIBROMOETHANE	106-93-4	8.50E-03	N	---	1.70E-03	9.00E+00	---	**2E-04**	1.62E-04	6.00E-04		**1E-07**
1,2-DICHLOROETHANE	107-06-2	9.00E-01	Y	---	1.80E-01	7.00E+00	---	**3E-02**	1.72E-02	2.60E-05		**4E-07**
1,2-DICHLOROPROPANE	78-87-5	4.00E-02	N	---	8.00E-03	4.00E+00	---	**2E-03**	7.63E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	1.70E+00	Y	---	3.40E-01	6.00E+01	---	**6E-03**	3.24E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.40E-02	N	---	8.80E-03	8.00E+02	---	**1E-05**	8.39E-04	1.10E-05		**9E-09**
BENZENE	71-43-2	2.50E+00	Y	---	5.00E-01	3.00E+01	---	**2E-02**	4.77E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	7.00E-02	N	---	1.40E-02	1.00E+00	---	**1E-02**	1.34E-03	4.90E-05		**7E-08**
BROMODICHLOROMETHANE	75-27-4	3.00E-01	Y	---	6.00E-02	NA	---	---	5.72E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	1.95E-01	N	---	3.90E-02	5.00E+00	---	**8E-03**	3.72E-03	-		---
CARBON TETRACHLORIDE	56-23-5	1.20E+00	Y	---	2.40E-01	1.00E+02	---	**2E-03**	2.29E-02	6.00E-06		**1E-07**
CHLOROFORM	67-66-3	1.40E+00	Y	---	2.80E-01	9.77E+01	---	**3E-03**	2.67E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	3.60E+00	Y	---	7.20E-01	1.00E+03	---	**7E-04**	6.87E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	---	1.70E-01	NA	---	---	1.62E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	1.20E+02	Y	---	2.40E+01	2.00E+02	---	**1E-01**	2.29E+00	-		---
M,P-XYLENE	108-38-3	1.80E+01	Y	---	3.60E+00	1.00E+02	---	**4E-02**	3.43E-01	-		---
METHYLENE CHLORIDE	75-09-2	4.80E-01	N	---	9.60E-02	6.00E+02	---	**2E-04**	9.15E-03	1.00E-08	M	**9E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	6.20E+00	Y	---	1.24E+00	1.00E+02	---	**1E-02**	1.18E-01	-		---
TETRACHLOROETHENE	127-18-4	4.70E-01	Y	---	9.40E-02	4.00E+01	---	**2E-03**	8.96E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	2.00E-02	Y	---	4.00E-03	2.00E+00	---	**2E-03**	3.81E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	2.75E-03	N	---	5.50E-04	8.00E+01	---	**7E-06**	5.24E-05	4.40E-06	M	**2E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0102H**	**Total Inhalation**	---	**4E-01**	**3E-06**
		Based on NDs only	**0E+00**	**1E-01**	**6E-07**
		Based on Detects only	**#VALUE!**	**2E-01**	**2E-06**
		Site-related only	**0E+00**	**7E-03**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0102H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.80E-01	NA	NA	NA	9.15E-03	1.0E-08		---	---	---	9E-11	**9E-11**
TRICHLOROETHENE	79-01-6	2.00E-02	NA	NA	NA	3.81E-04	1.0E-06	kidney	---	---	---	4E-10	**4E-10**
TRICHLOROETHENE	79-01-6	2.00E-02	NA		3.81E-04		3.1E-06	NHL+liver	---		1E-09		**1E-09**
VINYL CHLORIDE	75-01-4	2.75E-03	NA	NA	NA	5.24E-05	4.4E-06		---	---	---	2E-10	**2E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0118H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00E-01	N	---	2.00E-02	NA	---	---	1.91E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	4.50E-01	N	---	9.00E-02	2.00E+00	---	**5E-02**	8.58E-03	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	1.20E-01	Y	---	2.40E-02	3.00E+01	---	**8E-04**	2.29E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	9.50E-02	N	---	1.90E-02	2.00E-01	---	**1E-01**	1.81E-03	1.60E-05		**3E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	3.05E+00	N	---	6.10E-01	2.00E+00	---	**3E-01**	5.82E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.70E-01	Y	---	9.40E-02	6.00E+01	---	**2E-03**	8.96E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.30E-01	N	---	6.60E-02	9.00E+00	---	**7E-03**	6.29E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	7.80E-02	Y	---	1.56E-02	7.00E+00	---	**2E-03**	1.49E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	4.70E-01	N	---	9.40E-02	4.00E+00	---	**2E-02**	8.96E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	5.50E-01	N	---	1.10E-01	6.00E+01	---	**2E-03**	1.05E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	3.70E-01	N	---	7.40E-02	8.00E+02	---	**9E-05**	7.06E-03	1.10E-05		**8E-08**
BENZENE	71-43-2	7.30E-01	Y	---	1.46E-01	3.00E+01	---	**5E-03**	1.39E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	1.10E+00	N	---	2.20E-01	1.00E+00	---	**2E-01**	2.10E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.15E+00	N	---	2.30E-01	NA	---	---	2.19E-02	3.70E-05		**8E-07**
BROMOMETHANE	74-83-9	3.75E+00	N	---	7.50E-01	5.00E+00	---	**2E-01**	7.15E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	---	9.00E-02	1.00E+02	---	**9E-04**	8.58E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	2.20E+00	Y	---	4.40E-01	9.77E+01	---	**5E-03**	4.20E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	9.00E+00	Y	---	1.80E+00	7.00E+01	---	**3E-02**	1.72E-01	-		---
ETHYLBENZENE	100-41-4	3.90E-01	Y	---	7.80E-02	1.00E+03	---	**8E-05**	7.44E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.70E+00	N	---	7.40E-01	NA	---	---	7.06E-02	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	1.40E+01	Y	---	2.80E+00	2.00E+02	---	**1E-02**	2.67E-01	-		---
M,P-XYLENE	108-38-3	1.70E+00	Y	---	3.40E-01	1.00E+02	---	**3E-03**	3.24E-02	-		---
METHYLENE CHLORIDE	75-09-2	5.00E+02	Y	---	1.00E+02	6.00E+02	---	**2E-01**	9.54E+00	1.00E-08	M	**1E-07**
NAPHTHALENE	91-20-3	2.75E-02	N	---	5.50E-03	3.00E+00	---	**2E-03**	5.24E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	5.40E-01	Y	---	1.08E-01	1.00E+02	---	**1E-03**	1.03E-02	-		---
TETRACHLOROETHENE	127-18-4	4.90E+00	Y	---	9.80E-01	4.00E+01	---	**2E-02**	9.35E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	3.10E-02	Y	---	6.20E-03	2.00E+00	---	**3E-03**	5.91E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	3.00E-02	N	---	6.00E-03	8.00E+01	---	**8E-05**	5.72E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0118H**	**Total Inhalation**	---	**1E+00**	**9E-06**
		Based on NDs only	**0E+00**	**8E-01**	**8E-06**
		Based on Detects only	**#VALUE!**	**3E-01**	**1E-06**
		Site-related only	**0E+00**	**3E-02**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0118H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.00E+02	NA	NA	NA	9.54E+00	1.0E-08		---	---	---	1E-07	**1E-07**
TRICHLOROETHENE	79-01-6	3.10E-02	NA	NA	NA	5.91E-04	1.0E-06	kidney	---	---	---	6E-10	**6E-10**
TRICHLOROETHENE	79-01-6	3.10E-02	NA		5.91E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	3.00E-02	NA	NA	NA	5.72E-04	4.4E-06		---	---	---	3E-09	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0121H**

Pathway:
Inhalation of Indoor Air

			CTE child	CTE adult			CTE lifetime			
		TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.90E-02	N	---	5.80E-03	NA	---	---	5.53E-04	5.80E-05		**3E-08**
1,3-BUTADIENE	106-99-0	9.00E-02	N	---	1.80E-02	2.00E+00	---	**9E-03**	1.72E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	2.00E-01	Y	---	4.00E-02	3.00E+01	---	**1E-03**	3.81E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.90E-02	N	---	3.80E-03	2.00E-01	---	**2E-02**	3.62E-04	1.60E-05		**6E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	---	1.40E-01	2.00E+00	---	**7E-02**	1.34E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.35E-01	N	---	2.70E-02	6.00E+01	---	**5E-04**	2.57E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	---	1.40E-02	9.00E+00	---	**2E-03**	1.34E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	1.00E-01	Y	---	2.00E-02	7.00E+00	---	**3E-03**	1.91E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	1.90E-02	4.00E+00	---	**5E-03**	1.81E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	---	2.30E-02	6.00E+01	---	**4E-04**	2.19E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.10E-02	Y	---	1.22E-02	8.00E+02	---	**2E-05**	1.16E-03	1.10E-05		**1E-08**
BENZENE	71-43-2	7.30E-01	Y	---	1.46E-01	3.00E+01	---	**5E-03**	1.39E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	2.30E-01	N	---	4.60E-02	1.00E+00	---	**5E-02**	4.39E-03	4.90E-05		**2E-07**
BROMODICHLOROMETHANE	75-27-4	2.40E-01	Y	---	4.80E-02	NA	---	---	4.58E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	7.50E-01	N	---	1.50E-01	5.00E+00	---	**3E-02**	1.43E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	---	9.00E-02	1.00E+02	---	**9E-04**	8.58E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	9.80E-01	Y	---	1.96E-01	9.77E+01	---	**2E-03**	1.87E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	2.10E+00	Y	---	4.20E-01	7.00E+01	---	**6E-03**	4.01E-02	-		**---**
ETHYLBENZENE	100-41-4	3.20E-01	Y	---	6.40E-02	1.00E+03	---	**6E-05**	6.10E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	---	1.50E-01	NA	---	---	1.43E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	5.90E+01	Y	---	1.18E+01	2.00E+02	---	**6E-02**	1.13E+00	-		**---**
M,P-XYLENE	108-38-3	1.30E+00	Y	---	2.60E-01	1.00E+02	---	**3E-03**	2.48E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	5.50E-01	N	---	1.10E-01	6.00E+02	---	**2E-04**	1.05E-02	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	1.50E-01	Y	---	3.00E-02	3.00E+00	---	**1E-02**	2.86E-03	3.40E-05		**1E-07**
O-XYLENE	95-47-6	3.90E-01	Y	---	7.80E-02	1.00E+02	---	**8E-04**	7.44E-03	-		**---**
TETRACHLOROETHENE	127-18-4	3.90E+00	Y	---	7.80E-01	4.00E+01	---	**2E-02**	7.44E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	5.90E-02	Y	---	1.18E-02	2.00E+00	---	**6E-03**	1.13E-03	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	5.30E-02	Y	---	1.06E-02	8.00E+01	---	**1E-04**	1.01E-03	4.40E-06	M	**4E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0121H**	**Total Inhalation**	**---**	**3E-01**	**2E-06**
		Based on NDs only	**0E+00**	**2E-01**	**1E-06**
		Based on Detects only	**#VALUE!**	**1E-01**	**1E-06**
		Site-related only	**0E+00**	**3E-02**	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0121H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.50E-01	NA	NA	NA	1.05E-02	1.0E-08		---	---	---	1E-10	**1E-10**
TRICHLOROETHENE	79-01-6	5.90E-02	NA	NA	NA	1.13E-03	1.0E-06	kidney	---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	5.90E-02	NA		1.13E-03		3.1E-06	NHL+liver	---		3E-09		**3E-09**
VINYL CHLORIDE	75-01-4	5.30E-02	NA	NA	NA	1.01E-03	4.4E-06		---	---	---	4E-09	**4E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0122H**

Pathway:
Inhalation of Indoor Air

			CTE child	CTE adult			CTE lifetime			
		TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00E-02	N	---	4.00E-03	NA	---	---	3.81E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	2.30E-01	Y	---	4.60E-02	2.00E+00	---	**2E-02**	4.39E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	1.70E-01	Y	---	3.40E-02	3.00E+01	---	**1E-03**	3.24E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.90E-02	N	---	3.80E-03	2.00E-01	---	**2E-02**	3.62E-04	1.60E-05		**6E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	---	1.20E-01	2.00E+00	---	**6E-02**	1.14E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	6.20E-01	Y	---	1.24E-01	6.00E+01	---	**2E-03**	1.18E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.50E-02	N	---	1.30E-02	9.00E+00	---	**1E-03**	1.24E-03	6.00E-04		**7E-07**
1,2-DICHLOROETHANE	107-06-2	8.60E-02	Y	---	1.72E-02	7.00E+00	---	**2E-03**	1.64E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	1.90E-02	4.00E+00	---	**5E-03**	1.81E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	---	2.30E-02	6.00E+01	---	**4E-04**	2.19E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	7.20E-02	Y	---	1.44E-02	8.00E+02	---	**2E-05**	1.37E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	5.80E-01	Y	---	1.16E-01	3.00E+01	---	**4E-03**	1.11E-02	7.80E-06		**9E-08**
BENZYL CHLORIDE	100-44-7	2.25E-01	N	---	4.50E-02	1.00E+00	---	**5E-02**	4.29E-03	4.90E-05		**2E-07**
BROMODICHLOROMETHANE	75-27-4	2.30E-01	N	---	4.60E-02	NA	---	---	4.39E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	7.50E-01	N	---	1.50E-01	5.00E+00	---	**3E-02**	1.43E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	---	9.60E-02	1.00E+02	---	**1E-03**	9.15E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	7.40E-01	Y	---	1.48E-01	9.77E+01	---	**2E-03**	1.41E-02	2.30E-05		**3E-07**
ETHYL ACETATE	141-78-6	6.30E+00	Y	---	1.26E+00	7.00E+01	---	**2E-02**	1.20E-01	-		---
ETHYLBENZENE	100-41-4	2.30E-01	Y	---	4.60E-02	1.00E+03	---	**5E-05**	4.39E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	---	1.50E-01	NA	---	---	1.43E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	2.10E+01	Y	---	4.20E+00	2.00E+02	---	**2E-02**	4.01E-01	-		---
M,P-XYLENE	108-38-3	8.10E-01	Y	---	1.62E-01	1.00E+02	---	**2E-03**	1.54E-02	-		---
METHYLENE CHLORIDE	75-09-2	7.00E-01	Y	---	1.40E-01	6.00E+02	---	**2E-04**	1.34E-02	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	2.80E-02	N	---	5.60E-03	3.00E+00	---	**2E-03**	5.34E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	3.10E-01	Y	---	6.20E-02	1.00E+02	---	**6E-04**	5.91E-03	-		---
TETRACHLOROETHENE	127-18-4	4.80E+00	Y	---	9.60E-01	4.00E+01	---	**2E-02**	9.15E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	2.20E-02	Y	---	4.40E-03	2.00E+00	---	**2E-03**	4.20E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	6.00E-03	N	---	1.20E-03	8.00E+01	---	**2E-05**	1.14E-04	4.40E-06	M	**5E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0122H**	**Total Inhalation**	---	**3E-01**	**2E-06**
		Based on NDs only	**0E+00**	**2E-01**	**1E-06**
		Based on Detects only	**#VALUE!**	**1E-01**	**7E-07**
		Site-related only	**0E+00**	**3E-02**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0122H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.00E-01	NA	NA	NA	1.34E-02	1.0E-08		---	---	---	1E-10	**1E-10**
TRICHLOROETHENE	79-01-6	2.20E-02	NA	NA	NA	4.20E-04	1.0E-06	kidney	---	---	---	4E-10	**4E-10**
TRICHLOROETHENE	79-01-6	2.20E-02	NA		4.20E-04		3.1E-06	NHL+liver	---		1E-09		**1E-09**
VINYL CHLORIDE	75-01-4	6.00E-03	NA	NA	NA	1.14E-04	4.4E-06		---	---	---	5E-10	**5E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0133H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	---	4.30E-03	NA	---	---	4.10E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	9.50E-02	N	---	1.90E-02	2.00E+00	---	**1E-02**	1.81E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	1.50E-01	Y	---	3.00E-02	3.00E+01	---	**1E-03**	2.86E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	---	4.00E-03	2.00E-01	---	**2E-02**	3.81E-04	1.60E-05		**6E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	---	1.30E-01	2.00E+00	---	**7E-02**	1.24E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.00E-01	Y	---	1.00E-01	6.00E+01	---	**2E-03**	9.54E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	---	1.40E-02	9.00E+00	---	**2E-03**	1.34E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	2.50E-01	Y	---	5.00E-02	7.00E+00	---	**7E-03**	4.77E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	---	2.00E-02	4.00E+00	---	**5E-03**	1.91E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	1.25E-01	N	---	2.50E-02	6.00E+01	---	**4E-04**	2.38E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	2.80E-02	Y	---	5.60E-03	8.00E+02	---	**7E-06**	5.34E-04	1.10E-05		**6E-09**
BENZENE	71-43-2	9.70E-01	Y	---	1.94E-01	3.00E+01	---	**6E-03**	1.85E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	2.40E-01	N	---	4.80E-02	1.00E+00	---	**5E-02**	4.58E-03	4.90E-05		**2E-07**
BROMODICHLOROMETHANE	75-27-4	1.10E+00	Y	---	2.20E-01	NA	---	---	2.10E-02	3.70E-05		**8E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.60E-01	5.00E+00	---	**3E-02**	1.53E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	---	9.60E-02	1.00E+02	---	**1E-03**	9.15E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	4.70E+00	Y	---	9.40E-01	9.77E+01	---	**1E-02**	8.96E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	7.20E+00	Y	---	1.44E+00	7.00E+01	---	**2E-02**	1.37E-01	-		---
ETHYLBENZENE	100-41-4	3.50E-01	Y	---	7.00E-02	1.00E+03	---	**7E-05**	6.68E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	---	1.60E-01	NA	---	---	1.53E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	2.50E+01	Y	---	5.00E+00	2.00E+02	---	**3E-02**	4.77E-01	-		---
M,P-XYLENE	108-38-3	1.10E+00	Y	---	2.20E-01	1.00E+02	---	**2E-03**	2.10E-02	-		---
METHYLENE CHLORIDE	75-09-2	8.40E-01	Y	---	1.68E-01	6.00E+02	---	**3E-04**	1.60E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	2.65E-02	N	---	5.30E-03	3.00E+00	---	**2E-03**	5.05E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	4.80E-01	Y	---	9.60E-02	1.00E+02	---	**1E-03**	9.15E-03	-		---
TETRACHLOROETHENE	127-18-4	3.90E-01	Y	---	7.80E-02	4.00E+01	---	**2E-03**	7.44E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	2.40E-02	Y	---	4.80E-03	2.00E+00	---	**2E-03**	4.58E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	6.50E-03	N	---	1.30E-03	8.00E+01	---	**2E-05**	1.24E-04	4.40E-06	M	**5E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0133H**	**Total Inhalation**	---	**3E-01**	**5E-06**
		Based on NDs only	**0E+00**	**2E-01**	**1E-06**
		Based on Detects only	**#VALUE!**	**8E-02**	**3E-06**
		Site-related only	**0E+00**	**5E-03**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0133H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.40E-01	NA	NA	NA	1.60E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	2.40E-02	NA	NA	NA	4.58E-04	1.0E-06	kidney	---	---	---	5E-10	**5E-10**
TRICHLOROETHENE	79-01-6	2.40E-02	NA		4.58E-04		3.1E-06	NHL+liver	---		1E-09		**1E-09**
VINYL CHLORIDE	75-01-4	6.50E-03	NA	NA	NA	1.24E-04	4.4E-06		---	---	---	5E-10	**5E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0135H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	4.05E-02	N	---	8.10E-03	NA	---	---	7.72E-04	5.80E-05		**4E-08**
1,3-BUTADIENE	106-99-0	1.80E-01	N	---	3.60E-02	2.00E+00	---	**2E-02**	3.43E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	1.10E-01	N	---	2.20E-02	3.00E+01	---	**7E-04**	2.10E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	3.75E-02	N	---	7.50E-03	2.00E-01	---	**4E-02**	7.15E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.20E+00	N	---	2.40E-01	2.00E+00	---	**1E-01**	2.29E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.60E-01	Y	---	1.52E-01	6.00E+01	---	**3E-03**	1.45E-02	-		---
1,2-DIBROMOETHANE	106-93-4	1.35E-01	N	---	2.70E-02	9.00E+00	---	**3E-03**	2.57E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	1.60E-01	Y	---	3.20E-02	7.00E+00	---	**5E-03**	3.05E-03	2.60E-05		**8E-08**
1,2-DICHLOROPROPANE	78-87-5	1.90E-01	N	---	3.80E-02	4.00E+00	---	**1E-02**	3.62E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	2.30E-01	N	---	4.60E-02	6.00E+01	---	**8E-04**	4.39E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	3.00E-02	Y	---	6.00E-03	8.00E+02	---	**8E-06**	5.72E-04	1.10E-05		**6E-09**
BENZENE	71-43-2	7.10E-01	Y	---	1.42E-01	3.00E+01	---	**5E-03**	1.35E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	4.50E-01	N	---	9.00E-02	1.00E+00	---	**9E-02**	8.58E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	4.60E-01	N	---	9.20E-02	NA	---	---	8.77E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	1.50E+00	N	---	3.00E-01	5.00E+00	---	**6E-02**	2.86E-02	-		---
CARBON TETRACHLORIDE	56-23-5	5.00E-01	Y	---	1.00E-01	1.00E+02	---	**1E-03**	9.54E-03	6.00E-06		**6E-08**
CHLOROFORM	67-66-3	1.70E+00	Y	---	3.40E-01	9.77E+01	---	**3E-03**	3.24E-02	2.30E-05		**7E-07**
ETHYL ACETATE	141-78-6	1.80E+01	Y	---	3.60E+00	7.00E+01	---	**5E-02**	3.43E-01	-		---
ETHYLBENZENE	100-41-4	1.20E+01	Y	---	2.40E+00	1.00E+03	---	**2E-03**	2.29E-01	2.50E-06		**6E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.50E+00	N	---	3.00E-01	NA	---	---	2.86E-02	2.20E-05		**6E-07**
ISOPROPYL ALCOHOL	67-63-0	1.40E+01	Y	---	2.80E+00	2.00E+02	---	**1E-02**	2.67E-01	-		---
M,P-XYLENE	108-38-3	4.10E+01	Y	---	8.20E+00	1.00E+02	---	**8E-02**	7.82E-01	-		---
METHYLENE CHLORIDE	75-09-2	6.00E-01	N	---	1.20E-01	6.00E+02	---	**2E-04**	1.14E-02	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	1.60E-01	Y	---	3.20E-02	3.00E+00	---	**1E-02**	3.05E-03	3.40E-05		**1E-07**
O-XYLENE	95-47-6	1.20E+01	Y	---	2.40E+00	1.00E+02	---	**2E-02**	2.29E-01	-		---
TETRACHLOROETHENE	127-18-4	4.50E-01	Y	---	9.00E-02	4.00E+01	---	**2E-03**	8.58E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	5.50E-02	N	---	1.10E-02	2.00E+00	---	**6E-03**	1.05E-03	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	1.20E-02	N	---	2.40E-03	8.00E+01	---	**3E-05**	2.29E-04	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0135H**	**Total Inhalation**	---	**5E-01**	**5E-06**
		Based on NDs only	**0E+00**	**3E-01**	**3E-06**
		Based on Detects only	**#VALUE!**	**2E-01**	**2E-06**
		Site-related only	**0E+00**	**9E-03**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0135H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.00E-01	NA	NA	NA	1.14E-02	1.0E-08		---	---	---	1E-10	**1E-10**
TRICHLOROETHENE	79-01-6	5.50E-02	NA	NA	NA	1.05E-03	1.0E-06	kidney	---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	5.50E-02	NA		1.05E-03		3.1E-06	NHL+liver	---		3E-09		**3E-09**
VINYL CHLORIDE	75-01-4	1.20E-02	NA	NA	NA	2.29E-04	4.4E-06		---	---	---	1E-09	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0137H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	---	4.30E-03	NA	---	---	4.10E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	9.50E-02	N	---	1.90E-02	2.00E+00	---	**1E-02**	1.81E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	1.80E-01	Y	---	3.60E-02	3.00E+01	---	**1E-03**	3.43E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	---	4.00E-03	2.00E-01	---	**2E-02**	3.81E-04	1.60E-05		**6E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	---	1.30E-01	2.00E+00	---	**7E-02**	1.24E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.10E+00	Y	---	2.20E-01	6.00E+01	---	**4E-03**	2.10E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	---	1.40E-02	9.00E+00	---	**2E-03**	1.34E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	9.30E-02	Y	---	1.86E-02	7.00E+00	---	**3E-03**	1.77E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	---	2.00E-02	4.00E+00	---	**5E-03**	1.91E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	2.50E-01	Y	---	5.00E-02	6.00E+01	---	**8E-04**	4.77E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	---	1.60E-02	8.00E+02	---	**2E-05**	1.53E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	3.30E+00	Y	---	6.60E-01	3.00E+01	---	**2E-02**	6.29E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	2.40E-01	N	---	4.80E-02	1.00E+00	---	**5E-02**	4.58E-03	4.90E-05		**2E-07**
BROMODICHLOROMETHANE	75-27-4	2.45E-01	N	---	4.90E-02	NA	---	---	4.67E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.60E-01	5.00E+00	---	**3E-02**	1.53E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	---	9.60E-02	1.00E+02	---	**1E-03**	9.15E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	1.50E+00	Y	---	3.00E-01	9.77E+01	---	**3E-03**	2.86E-02	2.30E-05		**7E-07**
ETHYL ACETATE	141-78-6	5.20E+00	Y	---	1.04E+00	7.00E+01	---	**1E-02**	9.92E-02	-		**---**
ETHYLBENZENE	100-41-4	1.80E+00	Y	---	3.60E-01	1.00E+03	---	**4E-04**	3.43E-02	2.50E-06		**9E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	---	1.60E-01	NA	---	---	1.53E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	4.80E+00	Y	---	9.60E-01	2.00E+02	---	**5E-03**	9.15E-02	-		**---**
M,P-XYLENE	108-38-3	8.80E+00	Y	---	1.76E+00	1.00E+02	---	**2E-02**	1.68E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	9.40E-01	Y	---	1.88E-01	6.00E+02	---	**3E-04**	1.79E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	2.80E-02	N	---	5.60E-03	3.00E+00	---	**2E-03**	5.34E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	2.30E+00	Y	---	4.60E-01	1.00E+02	---	**5E-03**	4.39E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.20E+00	Y	---	2.40E-01	4.00E+01	---	**6E-03**	2.29E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	1.30E-01	Y	---	2.60E-02	2.00E+00	---	**1E-02**	2.48E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	1.30E-02	Y	---	2.60E-03	8.00E+01	---	**3E-05**	2.48E-04	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0137H**	**Total Inhalation**	**---**	**3E-01**	**3E-06**
		Based on NDs only	**0E+00**	**2E-01**	**2E-06**
		Based on Detects only	**#VALUE!**	**1E-01**	**1E-06**
		Site-related only	**0E+00**	**2E-02**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0137H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.40E-01	NA	NA	NA	1.79E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	1.30E-01	NA	NA	NA	2.48E-03	1.0E-06	kidney	---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	1.30E-01	NA		2.48E-03		3.1E-06	NHL+liver	---		8E-09		**8E-09**
VINYL CHLORIDE	75-01-4	1.30E-02	NA	NA	NA	2.48E-04	4.4E-06		---	---	---	1E-09	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0139H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.30E-02	N	---	4.60E-03	NA	---	---	4.39E-04	5.80E-05		**3E-08**
1,3-BUTADIENE	106-99-0	1.30E+00	Y	---	2.60E-01	2.00E+00	---	**1E-01**	2.48E-02	3.00E-05		**7E-07**
1,4-DIOXANE	123-91-1	2.20E-01	Y	---	4.40E-02	3.00E+01	---	**1E-03**	4.20E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.15E-02	N	---	4.30E-03	2.00E-01	---	**2E-02**	4.10E-04	1.60E-05		**7E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	---	1.40E-01	2.00E+00	---	**7E-02**	1.34E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.40E-01	Y	---	8.80E-02	6.00E+01	---	**1E-03**	8.39E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	---	1.50E-02	9.00E+00	---	**2E-03**	1.43E-03	6.00E-04		**9E-07**
1,2-DICHLOROETHANE	107-06-2	4.90E-01	Y	---	9.80E-02	7.00E+00	---	**1E-02**	9.35E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.10E-01	N	---	2.20E-02	4.00E+00	---	**6E-03**	2.10E-03	3.70E-06		**8E-09**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	---	2.60E-02	6.00E+01	---	**4E-04**	2.48E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	5.60E+01	Y	---	1.12E+01	8.00E+02	---	**1E-02**	1.07E+00	1.10E-05		**1E-05**
BENZENE	71-43-2	1.90E+00	Y	---	3.80E-01	3.00E+01	---	**1E-02**	3.62E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	2.60E-01	N	---	5.20E-02	1.00E+00	---	**5E-02**	4.96E-03	4.90E-05		**2E-07**
BROMODICHLOROMETHANE	75-27-4	2.60E-01	N	---	5.20E-02	NA	---	---	4.96E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	1.90E+00	Y	---	3.80E-01	5.00E+00	---	**8E-02**	3.62E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	---	8.80E-02	1.00E+02	---	**9E-04**	8.39E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	1.00E+00	Y	---	2.00E-01	9.77E+01	---	**2E-03**	1.91E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	1.10E+01	Y	---	2.20E+00	7.00E+01	---	**3E-02**	2.10E-01	-		---
ETHYLBENZENE	100-41-4	5.30E-01	Y	---	1.06E-01	1.00E+03	---	**1E-04**	1.01E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	---	1.70E-01	NA	---	---	1.62E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	3.60E+02	Y	---	7.20E+01	2.00E+02	---	**4E-01**	6.87E+00	-		---
M,P-XYLENE	108-38-3	1.70E+00	Y	---	3.40E-01	1.00E+02	---	**3E-03**	3.24E-02	-		---
METHYLENE CHLORIDE	75-09-2	3.45E-01	N	---	6.90E-02	6.00E+02	---	**1E-04**	6.58E-03	1.00E-08	M	**7E-11**
NAPHTHALENE	91-20-3	3.05E-02	N	---	6.10E-03	3.00E+00	---	**2E-03**	5.82E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	4.40E-01	Y	---	8.80E-02	1.00E+02	---	**9E-04**	8.39E-03	-		---
TETRACHLOROETHENE	127-18-4	1.50E-01	Y	---	3.00E-02	4.00E+01	---	**8E-04**	2.86E-03	2.60E-07		**7E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	N	---	1.00E-02	2.00E+00	---	**5E-03**	9.54E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	7.00E-03	N	---	1.40E-03	8.00E+01	---	**2E-05**	1.34E-04	4.40E-06	M	**6E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0139H**	**Total Inhalation**	---	**8E-01**	**2E-05**
		Based on NDs only	**0E+00**	**2E-01**	**2E-06**
		Based on Detects only	**#VALUE!**	**6E-01**	**1E-05**
		Site-related only	**0E+00**	**7E-03**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0139H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.45E-01	NA	NA	NA	6.58E-03	1.0E-08		---	---	---	7E-11	**7E-11**
TRICHLOROETHENE	79-01-6	5.00E-02	NA	NA	NA	9.54E-04	1.0E-06	kidney	---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	NA		9.54E-04		3.1E-06	NHL+liver	---		3E-09		**3E-09**
VINYL CHLORIDE	75-01-4	7.00E-03	NA	NA	NA	1.34E-04	4.4E-06		---	---	---	6E-10	**6E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0145H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	---	2.20E-03	NA	---	---	2.10E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	5.00E-02	N	---	1.00E-02	2.00E+00	---	**5E-03**	9.54E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	7.50E-02	N	---	1.50E-02	3.00E+01	---	**5E-04**	1.43E-03	5.00E-06		**7E-09**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	---	1.40E-03	2.00E-01	---	**7E-03**	1.34E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.90E-01	N	---	9.80E-02	2.00E+00	---	**5E-02**	9.35E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.50E-01	Y	---	3.00E-02	6.00E+01	---	**5E-04**	2.86E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.35E-02	N	---	6.70E-03	9.00E+00	---	**7E-04**	6.39E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	8.30E-02	Y	---	1.66E-02	7.00E+00	---	**2E-03**	1.58E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	1.90E-02	4.00E+00	---	**5E-03**	1.81E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	---	1.20E-02	6.00E+01	---	**2E-04**	1.14E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	2.80E+00	Y	---	5.60E-01	8.00E+02	---	**7E-04**	5.34E-02	1.10E-05		**6E-07**
BENZENE	71-43-2	4.10E-01	Y	---	8.20E-02	3.00E+01	---	**3E-03**	7.82E-03	7.80E-06		**6E-08**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	---	1.70E-02	1.00E+00	---	**2E-02**	1.62E-03	4.90E-05		**8E-08**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	---	2.60E-02	NA	---	---	2.48E-03	3.70E-05		**9E-08**
BROMOMETHANE	74-83-9	6.50E-01	N	---	1.30E-01	5.00E+00	---	**3E-02**	1.24E-02	-		---
CARBON TETRACHLORIDE	56-23-5	7.60E-01	Y	---	1.52E-01	1.00E+02	---	**2E-03**	1.45E-02	6.00E-06		**9E-08**
CHLOROFORM	67-66-3	3.90E-01	Y	---	7.80E-02	9.77E+01	---	**8E-04**	7.44E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.30E-01	Y	---	2.60E-02	1.00E+03	---	**3E-05**	2.48E-03	2.50E-06		**6E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	---	1.30E-01	NA	---	---	1.24E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	1.50E+01	Y	---	3.00E+00	2.00E+02	---	**2E-02**	2.86E-01	-		---
M,P-XYLENE	108-38-3	4.10E-01	Y	---	8.20E-02	1.00E+02	---	**8E-04**	7.82E-03	-		---
METHYLENE CHLORIDE	75-09-2	4.30E+00	Y	---	8.60E-01	6.00E+02	---	**1E-03**	8.20E-02	1.00E-08	M	**8E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.50E-01	Y	---	3.00E-02	1.00E+02	---	**3E-04**	2.86E-03	-		---
TETRACHLOROETHENE	127-18-4	4.70E+00	Y	---	9.40E-01	4.00E+01	---	**2E-02**	8.96E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	4.50E-02	Y	---	9.00E-03	2.00E+00	---	**5E-03**	8.58E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.00E-03	N	---	1.60E-03	8.00E+01	---	**2E-05**	1.53E-04	4.40E-06	M	**7E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0145H**	**Total Inhalation**	---	**2E-01**	**2E-06**
		Based on NDs only	**0E+00**	**1E-01**	**9E-07**
		Based on Detects only	**#VALUE!**	**5E-02**	**1E-06**
		Site-related only	**0E+00**	**3E-02**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0145H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.30E+00	NA	NA	NA	8.20E-02	1.0E-08		---	---	---	8E-10	**8E-10**
TRICHLOROETHENE	79-01-6	4.50E-02	NA	NA	NA	8.58E-04	1.0E-06	kidney	---	---	---	9E-10	**9E-10**
TRICHLOROETHENE	79-01-6	4.50E-02	NA		8.58E-04		3.1E-06	NHL+liver	---		3E-09		**3E-09**
VINYL CHLORIDE	75-01-4	8.00E-03	NA	NA	NA	1.53E-04	4.4E-06		---	---	---	7E-10	**7E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0146H**

Pathway:
Inhalation of Indoor Air

			CTE child	CTE adult			CTE lifetime		
		TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02		

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.25E-02	N	---	4.50E-03	NA	---	---	4.29E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	1.00E-01	N	---	2.00E-02	2.00E+00	---	**1E-02**	1.91E-03	3.00E-05		**6E-08**
1,4-DIOXANE	123-91-1	2.30E-01	Y	---	4.60E-02	3.00E+01	---	**2E-03**	4.39E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.10E-02	N	---	4.20E-03	2.00E-01	---	**2E-02**	4.01E-04	1.60E-05		**6E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	1.00E+00	N	---	2.00E-01	2.00E+00	---	**1E-01**	1.91E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.45E-01	N	---	2.90E-02	6.00E+01	---	**5E-04**	2.77E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	---	1.50E-02	9.00E+00	---	**2E-03**	1.43E-03	6.00E-04		**9E-07**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	---	2.80E-02	7.00E+00	---	**4E-03**	2.67E-03	2.60E-05		**7E-08**
1,2-DICHLOROPROPANE	78-87-5	1.90E-01	N	---	3.80E-02	4.00E+00	---	**1E-02**	3.62E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	---	2.60E-02	6.00E+01	---	**4E-04**	2.48E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	1.05E-01	N	---	2.10E-02	8.00E+02	---	**3E-05**	2.00E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	6.80E-01	Y	---	1.36E-01	3.00E+01	---	**5E-03**	1.30E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	2.50E-01	N	---	5.00E-02	1.00E+00	---	**5E-02**	4.77E-03	4.90E-05		**2E-07**
BROMODICHLOROMETHANE	75-27-4	2.60E-01	N	---	5.20E-02	NA	---	---	4.96E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	1.35E+00	N	---	2.70E-01	5.00E+00	---	**5E-02**	2.57E-02	-		---
CARBON TETRACHLORIDE	56-23-5	6.40E-01	Y	---	1.28E-01	1.00E+02	---	**1E-03**	1.22E-02	6.00E-06		**7E-08**
CHLOROFORM	67-66-3	1.30E+00	Y	---	2.60E-01	9.77E+01	---	**3E-03**	2.48E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	3.00E+00	Y	---	6.00E-01	7.00E+01	---	**9E-03**	5.72E-02	-		---
ETHYLBENZENE	100-41-4	1.70E-01	Y	---	3.40E-02	1.00E+03	---	**3E-05**	3.24E-03	2.50E-06		**8E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.35E+00	N	---	2.70E-01	NA	---	---	2.57E-02	2.20E-05		**6E-07**
ISOPROPYL ALCOHOL	67-63-0	9.00E+01	Y	---	1.80E+01	2.00E+02	---	**9E-02**	1.72E+00	-		---
M,P-XYLENE	108-38-3	5.30E-01	Y	---	1.06E-01	1.00E+02	---	**1E-03**	1.01E-02	-		---
METHYLENE CHLORIDE	75-09-2	3.35E-01	N	---	6.70E-02	6.00E+02	---	**1E-04**	6.39E-03	1.00E-08	M	**6E-11**
NAPHTHALENE	91-20-3	2.90E-02	N	---	5.80E-03	3.00E+00	---	**2E-03**	5.53E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	2.20E-01	Y	---	4.40E-02	1.00E+02	---	**4E-04**	4.20E-03	-		---
TETRACHLOROETHENE	127-18-4	1.00E+01	Y	---	2.00E+00	4.00E+01	---	**5E-02**	1.91E-01	2.60E-07		**5E-08**
TRICHLOROETHENE	79-01-6	2.80E-02	Y	---	5.60E-03	2.00E+00	---	**3E-03**	5.34E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	1.65E-02	N	---	3.30E-03	8.00E+01	---	**4E-05**	3.15E-04	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0146H**	**Total Inhalation**	---	**4E-01**	**3E-06**
		Based on NDs only	**0E+00**	**2E-01**	**2E-06**
		Based on Detects only	**#VALUE!**	**2E-01**	**9E-07**
		Site-related only	**0E+00**	**5E-02**	**8E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0146H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.35E-01	NA	NA	NA	6.39E-03	1.0E-08		---	---	---	6E-11	**6E-11**
TRICHLOROETHENE	79-01-6	2.80E-02	NA	NA	NA	5.34E-04	1.0E-06	kidney	---	---	---	5E-10	**5E-10**
TRICHLOROETHENE	79-01-6	2.80E-02	NA		5.34E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	1.65E-02	NA	NA	NA	3.15E-04	4.4E-06		---	---	---	1E-09	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0148H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.20E-02	N	---	4.40E-03	NA	---	---	4.20E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	1.00E-01	N	---	2.00E-02	2.00E+00	---	**1E-02**	1.91E-03	3.00E-05		**6E-08**
1,4-DIOXANE	123-91-1	1.60E-01	Y	---	3.20E-02	3.00E+01	---	**1E-03**	3.05E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.05E-02	N	---	4.10E-03	2.00E-01	---	**2E-02**	3.91E-04	1.60E-05		**6E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	---	1.30E-01	2.00E+00	---	**7E-02**	1.24E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E+00	Y	---	2.40E-01	6.00E+01	---	**4E-03**	2.29E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	---	1.50E-02	9.00E+00	---	**2E-03**	1.43E-03	6.00E-04		**9E-07**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	---	2.20E-02	7.00E+00	---	**3E-03**	2.10E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	---	2.10E-02	4.00E+00	---	**5E-03**	2.00E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	3.90E-01	Y	---	7.80E-02	6.00E+01	---	**1E-03**	7.44E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.10E-02	Y	---	8.20E-03	8.00E+02	---	**1E-05**	7.82E-04	1.10E-05		**9E-09**
BENZENE	71-43-2	8.80E-01	Y	---	1.76E-01	3.00E+01	---	**6E-03**	1.68E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	---	4.90E-02	1.00E+00	---	**5E-02**	4.67E-03	4.90E-05		**2E-07**
BROMODICHLOROMETHANE	75-27-4	2.50E-01	N	---	5.00E-02	NA	---	---	4.77E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.60E-01	5.00E+00	---	**3E-02**	1.53E-02	-		---
CARBON TETRACHLORIDE	56-23-5	5.60E-01	Y	---	1.12E-01	1.00E+02	---	**1E-03**	1.07E-02	6.00E-06		**6E-08**
CHLOROFORM	67-66-3	1.50E+00	Y	---	3.00E-01	9.77E+01	---	**3E-03**	2.86E-02	2.30E-05		**7E-07**
ETHYL ACETATE	141-78-6	8.40E+00	Y	---	1.68E+00	7.00E+01	---	**2E-02**	1.60E-01	-		---
ETHYLBENZENE	100-41-4	6.70E-01	Y	---	1.34E-01	1.00E+03	---	**1E-04**	1.28E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	---	1.60E-01	NA	---	---	1.53E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	6.30E+01	Y	---	1.26E+01	2.00E+02	---	**6E-02**	1.20E+00	-		---
M,P-XYLENE	108-38-3	2.00E+00	Y	---	4.00E-01	1.00E+02	---	**4E-03**	3.81E-02	-		---
METHYLENE CHLORIDE	75-09-2	4.40E+01	Y	---	8.80E+00	6.00E+02	---	**1E-02**	8.39E-01	1.00E-08	M	**8E-09**
NAPHTHALENE	91-20-3	5.70E-02	Y	---	1.14E-02	3.00E+00	---	**4E-03**	1.09E-03	3.40E-05		**4E-08**
O-XYLENE	95-47-6	7.80E-01	Y	---	1.56E-01	1.00E+02	---	**2E-03**	1.49E-02	-		---
TETRACHLOROETHENE	127-18-4	2.20E+00	Y	---	4.40E-01	4.00E+01	---	**1E-02**	4.20E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	N	---	1.00E-02	2.00E+00	---	**5E-03**	9.54E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	6.50E-03	N	---	1.30E-03	8.00E+01	---	**2E-05**	1.24E-04	4.40E-06	M	**5E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0148H**	**Total Inhalation**	---	**3E-01**	**3E-06**
		Based on NDs only	**0E+00**	**2E-01**	**2E-06**
		Based on Detects only	**#VALUE!**	**1E-01**	**1E-06**
		Site-related only	**0E+00**	**2E-02**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0148H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.40E+01	NA	NA	NA	8.39E-01	1.0E-08		---	---	---	8E-09	**8E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	NA	NA	NA	9.54E-04	1.0E-06	kidney	---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	NA		9.54E-04		3.1E-06	NHL+liver	---		3E-09		**3E-09**
VINYL CHLORIDE	75-01-4	6.50E-03	NA	NA	NA	1.24E-04	4.4E-06		---	---	---	5E-10	**5E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0153H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.05E-02	N	---	4.10E-03	NA	---	---	3.91E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	9.00E-02	N	---	1.80E-02	2.00E+00	---	**9E-03**	1.72E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	1.90E-01	Y	---	3.80E-02	3.00E+01	---	**1E-03**	3.62E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.90E-02	N	---	3.80E-03	2.00E-01	---	**2E-02**	3.62E-04	1.60E-05		**6E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	---	1.20E-01	2.00E+00	---	**6E-02**	1.14E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.40E-01	Y	---	8.80E-02	6.00E+01	---	**1E-03**	8.39E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	---	1.40E-02	9.00E+00	---	**2E-03**	1.34E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	---	2.20E-02	7.00E+00	---	**3E-03**	2.10E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	1.90E-02	4.00E+00	---	**5E-03**	1.81E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	---	2.30E-02	6.00E+01	---	**4E-04**	2.19E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	7.50E-02	N	---	1.50E-02	8.00E+02	---	**2E-05**	1.43E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	7.10E-01	Y	---	1.42E-01	3.00E+01	---	**5E-03**	1.35E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	2.30E-01	N	---	4.60E-02	1.00E+00	---	**5E-02**	4.39E-03	4.90E-05		**2E-07**
BROMODICHLOROMETHANE	75-27-4	2.30E-01	N	---	4.60E-02	NA	---	---	4.39E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	7.50E-01	N	---	1.50E-01	5.00E+00	---	**3E-02**	1.43E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	---	8.80E-02	1.00E+02	---	**9E-04**	8.39E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	1.10E+00	Y	---	2.20E-01	9.77E+01	---	**2E-03**	2.10E-02	2.30E-05		**5E-07**
ETHYL ACETATE	141-78-6	8.00E+00	Y	---	1.60E+00	7.00E+01	---	**2E-02**	1.53E-01	-		---
ETHYLBENZENE	100-41-4	2.80E-01	Y	---	5.60E-02	1.00E+03	---	**6E-05**	5.34E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	---	1.50E-01	NA	---	---	1.43E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	7.00E+01	Y	---	1.40E+01	2.00E+02	---	**7E-02**	1.34E+00	-		---
M,P-XYLENE	108-38-3	9.30E-01	Y	---	1.86E-01	1.00E+02	---	**2E-03**	1.77E-02	-		---
METHYLENE CHLORIDE	75-09-2	6.10E-01	Y	---	1.22E-01	6.00E+02	---	**2E-04**	1.16E-02	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	2.80E-02	N	---	5.60E-03	3.00E+00	---	**2E-03**	5.34E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	3.20E-01	Y	---	6.40E-02	1.00E+02	---	**6E-04**	6.10E-03	-		---
TETRACHLOROETHENE	127-18-4	8.20E-01	Y	---	1.64E-01	4.00E+01	---	**4E-03**	1.56E-02	2.60E-07		**4E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	---	1.00E-02	2.00E+00	---	**5E-03**	9.54E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	6.00E-03	N	---	1.20E-03	8.00E+01	---	**2E-05**	1.14E-04	4.40E-06	M	**5E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0153H**	**Total Inhalation**	---	**3E-01**	**2E-06**
		Based on NDs only	**0E+00**	**2E-01**	**2E-06**
		Based on Detects only	**#VALUE!**	**1E-01**	**7E-07**
		Site-related only	**0E+00**	**1E-02**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0153H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.10E-01	NA	NA	NA	1.16E-02	1.0E-08		---	---	---	1E-10	**1E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	NA	NA	NA	9.54E-04	1.0E-06	kidney	---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	NA		9.54E-04		3.1E-06	NHL+liver	---		3E-09		**3E-09**
VINYL CHLORIDE	75-01-4	6.00E-03	NA	NA	NA	1.14E-04	4.4E-06		---	---	---	5E-10	**5E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0162H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.50E-02	N	---	5.00E-03	NA	---	---	4.77E-04	5.80E-05		**3E-08**
1,3-BUTADIENE	106-99-0	1.15E-01	N	---	2.30E-02	2.00E+00	---	**1E-02**	2.19E-03	3.00E-05		**7E-08**
1,4-DIOXANE	123-91-1	2.00E-01	Y	---	4.00E-02	3.00E+01	---	**1E-03**	3.81E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.35E-02	N	---	4.70E-03	2.00E-01	---	**2E-02**	4.48E-04	1.60E-05		**7E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	7.50E-01	N	---	1.50E-01	2.00E+00	---	**8E-02**	1.43E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E+00	Y	---	2.40E-01	6.00E+01	---	**4E-03**	2.29E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	8.50E-02	N	---	1.70E-02	9.00E+00	---	**2E-03**	1.62E-03	6.00E-04		**1E-06**
1,2-DICHLOROETHANE	107-06-2	9.60E-01	Y	---	1.92E-01	7.00E+00	---	**3E-02**	1.83E-02	2.60E-05		**5E-07**
1,2-DICHLOROPROPANE	78-87-5	1.20E-01	N	---	2.40E-02	4.00E+00	---	**6E-03**	2.29E-03	3.70E-06		**8E-09**
1,3,5-Trimethylbenzene	108-67-8	2.90E-01	Y	---	5.80E-02	6.00E+01	---	**1E-03**	5.53E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.50E-02	N	---	1.90E-02	8.00E+02	---	**2E-05**	1.81E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	2.50E+00	Y	---	5.00E-01	3.00E+01	---	**2E-02**	4.77E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	2.80E-01	N	---	5.60E-02	1.00E+00	---	**6E-02**	5.34E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	2.85E-01	N	---	5.70E-02	NA	---	---	5.44E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	9.50E-01	N	---	1.90E-01	5.00E+00	---	**4E-02**	1.81E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	---	9.60E-02	1.00E+02	---	**1E-03**	9.15E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	6.80E-01	Y	---	1.36E-01	9.77E+01	---	**1E-03**	1.30E-02	2.30E-05		**3E-07**
ETHYL ACETATE	141-78-6	6.50E-01	Y	---	1.30E-01	7.00E+01	---	**2E-03**	1.24E-02	-		**---**
ETHYLBENZENE	100-41-4	1.20E+00	Y	---	2.40E-01	1.00E+03	---	**2E-04**	2.29E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	9.00E-01	N	---	1.80E-01	NA	---	---	1.72E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	1.10E+01	Y	---	2.20E+00	2.00E+02	---	**1E-02**	2.10E-01	-		**---**
M,P-XYLENE	108-38-3	5.20E+00	Y	---	1.04E+00	1.00E+02	---	**1E-02**	9.92E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	7.50E-01	Y	---	1.50E-01	6.00E+02	---	**3E-04**	1.43E-02	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	2.75E-02	N	---	5.50E-03	3.00E+00	---	**2E-03**	5.24E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	1.50E+00	Y	---	3.00E-01	1.00E+02	---	**3E-03**	2.86E-02	-		**---**
TETRACHLOROETHENE	127-18-4	5.20E-01	Y	---	1.04E-01	4.00E+01	---	**3E-03**	9.92E-03	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	2.90E-02	Y	---	5.80E-03	2.00E+00	---	**3E-03**	5.53E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	7.50E-03	N	---	1.50E-03	8.00E+01	---	**2E-05**	1.43E-04	4.40E-06	M	**6E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0162H**	**Total Inhalation**	**---**	**3E-01**	**3E-06**
		Based on NDs only	**0E+00**	**2E-01**	**2E-06**
		Based on Detects only	**#VALUE!**	**8E-02**	**1E-06**
		Site-related only	**0E+00**	**7E-03**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0162H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.50E-01	NA	NA	NA	1.43E-02	1.0E-08		---	---	---	1E-10	**1E-10**
TRICHLOROETHENE	79-01-6	2.90E-02	NA	NA	NA	5.53E-04	1.0E-06	kidney	---	---	---	6E-10	**6E-10**
TRICHLOROETHENE	79-01-6	2.90E-02	NA		5.53E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	7.50E-03	NA	NA	NA	1.43E-04	4.4E-06		---	---	---	6E-10	**6E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0166H**

Pathway:
Inhalation of Indoor Air

			CTE child	CTE adult			CTE lifetime			
		TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00E-02	N	---	4.00E-03	NA	---	---	3.81E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	9.00E-02	N	---	1.80E-02	2.00E+00	---	**9E-03**	1.72E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	1.50E-01	Y	---	3.00E-02	3.00E+01	---	**1E-03**	2.86E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.85E-02	N	---	3.70E-03	2.00E-01	---	**2E-02**	3.53E-04	1.60E-05		**6E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	1.10E+00	N	---	2.20E-01	2.00E+00	---	**1E-01**	2.10E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	3.20E-01	Y	---	6.40E-02	6.00E+01	---	**1E-03**	6.10E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.50E-02	N	---	1.30E-02	9.00E+00	---	**1E-03**	1.24E-03	6.00E-04		**7E-07**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	---	2.20E-02	7.00E+00	---	**3E-03**	2.10E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	1.90E-02	4.00E+00	---	**5E-03**	1.81E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	---	2.30E-02	6.00E+01	---	**4E-04**	2.19E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	7.50E-02	N	---	1.50E-02	8.00E+02	---	**2E-05**	1.43E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	6.20E-01	Y	---	1.24E-01	3.00E+01	---	**4E-03**	1.18E-02	7.80E-06		**9E-08**
BENZYL CHLORIDE	100-44-7	2.25E-01	N	---	4.50E-02	1.00E+00	---	**5E-02**	4.29E-03	4.90E-05		**2E-07**
BROMODICHLOROMETHANE	75-27-4	2.25E-01	N	---	4.50E-02	NA	---	---	4.29E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	7.50E-01	N	---	1.50E-01	5.00E+00	---	**3E-02**	1.43E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	---	9.40E-02	1.00E+02	---	**9E-04**	8.96E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	1.60E+00	Y	---	3.20E-01	9.77E+01	---	**3E-03**	3.05E-02	2.30E-05		**7E-07**
ETHYL ACETATE	141-78-6	1.40E+01	Y	---	2.80E+00	7.00E+01	---	**4E-02**	2.67E-01	-		**---**
ETHYLBENZENE	100-41-4	3.30E-01	Y	---	6.60E-02	1.00E+03	---	**7E-05**	6.29E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	---	1.70E-01	NA	---	---	1.62E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	3.80E+02	Y	---	7.60E+01	2.00E+02	---	**4E-01**	7.25E+00	-		**---**
M,P-XYLENE	108-38-3	1.10E+00	Y	---	2.20E-01	1.00E+02	---	**2E-03**	2.10E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	1.60E+00	Y	---	3.20E-01	6.00E+02	---	**5E-04**	3.05E-02	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	2.95E-02	N	---	5.90E-03	3.00E+00	---	**2E-03**	5.63E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	3.60E-01	Y	---	7.20E-02	1.00E+02	---	**7E-04**	6.87E-03	-		**---**
TETRACHLOROETHENE	127-18-4	5.70E+00	Y	---	1.14E+00	4.00E+01	---	**3E-02**	1.09E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	9.80E-01	Y	---	1.96E-01	2.00E+00	---	**1E-01**	1.87E-02	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	6.00E-03	N	---	1.20E-03	8.00E+01	---	**2E-05**	1.14E-04	4.40E-06	M	**5E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0166H**	**Total Inhalation**	**---**	**8E-01**	**3E-06**
		Based on NDs only	**0E+00**	**2E-01**	**2E-06**
		Based on Detects only	**#VALUE!**	**6E-01**	**1E-06**
		Site-related only	**0E+00**	**1E-01**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0166H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.60E+00	NA	NA	NA	3.05E-02	1.0E-08		---	---	---	3E-10	**3E-10**
TRICHLOROETHENE	79-01-6	9.80E-01	NA	NA	NA	1.87E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	9.80E-01	NA		1.87E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	6.00E-03	NA	NA	NA	1.14E-04	4.4E-06		---	---	---	5E-10	**5E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0172H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.30E-02	N	---	4.60E-03	NA	---	---	4.39E-04	5.80E-05		**3E-08**
1,3-BUTADIENE	106-99-0	4.75E-02	N	---	9.50E-03	2.00E+00	---	**5E-03**	9.06E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	8.00E-02	N	---	1.60E-02	3.00E+01	---	**5E-04**	1.53E-03	5.00E-06		**8E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.15E-02	N	---	2.30E-03	2.00E-01	---	**1E-02**	2.19E-04	1.60E-05		**4E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.75E-01	N	---	9.50E-02	2.00E+00	---	**5E-02**	9.06E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.20E-01	Y	---	1.04E-01	6.00E+01	---	**2E-03**	9.92E-03	-		---
1,2-DIBROMOETHANE	106-93-4	4.15E-02	N	---	8.30E-03	9.00E+00	---	**9E-04**	7.91E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	7.30E-02	Y	---	1.46E-02	7.00E+00	---	**2E-03**	1.39E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	---	1.80E-02	4.00E+00	---	**5E-03**	1.72E-03	3.70E-06		**6E-09**
1,3,5-Trimethylbenzene	108-67-8	1.60E-01	Y	---	3.20E-02	6.00E+01	---	**5E-04**	3.05E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.35E-02	N	---	8.70E-03	8.00E+02	---	**1E-05**	8.30E-04	1.10E-05		**9E-09**
BENZENE	71-43-2	3.40E-01	Y	---	6.80E-02	3.00E+01	---	**2E-03**	6.48E-03	7.80E-06		**5E-08**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	---	2.10E-02	1.00E+00	---	**2E-02**	2.00E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	1.05E-01	N	---	2.10E-02	NA	---	---	2.00E-03	3.70E-05		**7E-08**
BROMOMETHANE	74-83-9	5.50E-01	N	---	1.10E-01	5.00E+00	---	**2E-02**	1.05E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	---	8.20E-02	1.00E+02	---	**8E-04**	7.82E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	1.40E-01	Y	---	2.80E-02	9.77E+01	---	**3E-04**	2.67E-03	2.30E-05		**6E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	9.80E-02	Y	---	1.96E-02	1.00E+03	---	**2E-05**	1.87E-03	2.50E-06		**5E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.90E-01	N	---	7.80E-02	NA	---	---	7.44E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	1.20E+01	Y	---	2.40E+00	2.00E+02	---	**1E-02**	2.29E-01	-		---
M,P-XYLENE	108-38-3	3.30E-01	Y	---	6.60E-02	1.00E+02	---	**7E-04**	6.29E-03	-		---
METHYLENE CHLORIDE	75-09-2	5.40E-01	Y	---	1.08E-01	6.00E+02	---	**2E-04**	1.03E-02	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.20E-01	Y	---	2.40E-02	1.00E+02	---	**2E-04**	2.29E-03	-		---
TETRACHLOROETHENE	127-18-4	4.30E+00	Y	---	8.60E-01	4.00E+01	---	**2E-02**	8.20E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	2.80E-02	Y	---	5.60E-03	2.00E+00	---	**3E-03**	5.34E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	3.65E-03	N	---	7.30E-04	8.00E+01	---	**9E-06**	6.96E-05	4.40E-06	M	**3E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0172H**	**Total Inhalation**	---	**2E-01**	**1E-06**
		Based on NDs only	**0E+00**	**1E-01**	**9E-07**
		Based on Detects only	**#VALUE!**	**5E-02**	**2E-07**
		Site-related only	**0E+00**	**2E-02**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0172H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.40E-01	NA	NA	NA	1.03E-02	1.0E-08		---	---	---	1E-10	**1E-10**
TRICHLOROETHENE	79-01-6	2.80E-02	NA	NA	NA	5.34E-04	1.0E-06	kidney	---	---	---	5E-10	**5E-10**
TRICHLOROETHENE	79-01-6	2.80E-02	NA		5.34E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	3.65E-03	NA	NA	NA	6.96E-05	4.4E-06		---	---	---	3E-10	**3E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0173H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.20E-02	N	---	4.40E-03	NA	---	---	4.20E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	1.00E-01	N	---	2.00E-02	2.00E+00	---	**1E-02**	1.91E-03	3.00E-05		**6E-08**
1,4-DIOXANE	123-91-1	1.40E-01	Y	---	2.80E-02	3.00E+01	---	**9E-04**	2.67E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.05E-02	N	---	4.10E-03	2.00E-01	---	**2E-02**	3.91E-04	1.60E-05		**6E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	---	1.30E-01	2.00E+00	---	**7E-02**	1.24E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.70E-01	Y	---	9.40E-02	6.00E+01	---	**2E-03**	8.96E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	---	1.40E-02	9.00E+00	---	**2E-03**	1.34E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	2.00E-01	Y	---	4.00E-02	7.00E+00	---	**6E-03**	3.81E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	---	2.10E-02	4.00E+00	---	**5E-03**	2.00E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	1.25E-01	N	---	2.50E-02	6.00E+01	---	**4E-04**	2.38E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	---	1.60E-02	8.00E+02	---	**2E-05**	1.53E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	5.70E-01	Y	---	1.14E-01	3.00E+01	---	**4E-03**	1.09E-02	7.80E-06		**8E-08**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	---	4.90E-02	1.00E+00	---	**5E-02**	4.67E-03	4.90E-05		**2E-07**
BROMODICHLOROMETHANE	75-27-4	2.50E-01	N	---	5.00E-02	NA	---	---	4.77E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.60E-01	5.00E+00	---	**3E-02**	1.53E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	---	9.00E-02	1.00E+02	---	**9E-04**	8.58E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	2.00E+00	Y	---	4.00E-01	9.77E+01	---	**4E-03**	3.81E-02	2.30E-05		**9E-07**
ETHYL ACETATE	141-78-6	7.00E+00	Y	---	1.40E+00	7.00E+01	---	**2E-02**	1.34E-01	-		---
ETHYLBENZENE	100-41-4	1.10E-01	Y	---	2.20E-02	1.00E+03	---	**2E-05**	2.10E-03	2.50E-06		**5E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	---	1.60E-01	NA	---	---	1.53E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	2.70E+01	Y	---	5.40E+00	2.00E+02	---	**3E-02**	5.15E-01	-		---
M,P-XYLENE	108-38-3	4.50E-01	Y	---	9.00E-02	1.00E+02	---	**9E-04**	8.58E-03	-		---
METHYLENE CHLORIDE	75-09-2	3.25E-01	N	---	6.50E-02	6.00E+02	---	**1E-04**	6.20E-03	1.00E-08	M	**6E-11**
NAPHTHALENE	91-20-3	2.90E-02	N	---	5.80E-03	3.00E+00	---	**2E-03**	5.53E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	2.10E-01	Y	---	4.20E-02	1.00E+02	---	**4E-04**	4.01E-03	-		---
TETRACHLOROETHENE	127-18-4	5.10E+00	Y	---	1.02E+00	4.00E+01	---	**3E-02**	9.73E-02	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	1.20E-01	Y	---	2.40E-02	2.00E+00	---	**1E-02**	2.29E-03	4.10E-06	M	**9E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	6.50E-03	N	---	1.30E-03	8.00E+01	---	**2E-05**	1.24E-04	4.40E-06	M	**5E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0173H**	**Total Inhalation**	---	**3E-01**	**3E-06**
		Based on NDs only	**0E+00**	**2E-01**	**2E-06**
		Based on Detects only	**#VALUE!**	**1E-01**	**1E-06**
		Site-related only	**0E+00**	**4E-02**	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0173H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.25E-01	NA	NA	NA	6.20E-03	1.0E-08		---	---	---	6E-11	**6E-11**
TRICHLOROETHENE	79-01-6	1.20E-01	NA	NA	NA	2.29E-03	1.0E-06	kidney	---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	1.20E-01	NA		2.29E-03		3.1E-06	NHL+liver	---		7E-09		**7E-09**
VINYL CHLORIDE	75-01-4	6.50E-03	NA	NA	NA	1.24E-04	4.4E-06		---	---	---	5E-10	**5E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0174H**

Pathway:
Inhalation of Indoor Air

			CTE child	CTE adult			CTE lifetime			
		TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00E-02	N	---	4.00E-03	NA	---	---	3.81E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	9.00E-02	N	---	1.80E-02	2.00E+00	---	**9E-03**	1.72E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	5.50E-01	Y	---	1.10E-01	3.00E+01	---	**4E-03**	1.05E-02	5.00E-06		**5E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.85E-02	N	---	3.70E-03	2.00E-01	---	**2E-02**	3.53E-04	1.60E-05		**6E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	---	1.20E-01	2.00E+00	---	**6E-02**	1.14E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	6.40E-01	Y	---	1.28E-01	6.00E+01	---	**2E-03**	1.22E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.50E-02	N	---	1.30E-02	9.00E+00	---	**1E-03**	1.24E-03	6.00E-04		**7E-07**
1,2-DICHLOROETHANE	107-06-2	2.20E+00	Y	---	4.40E-01	7.00E+00	---	**6E-02**	4.20E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	1.90E-02	4.00E+00	---	**5E-03**	1.81E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	2.20E-01	Y	---	4.40E-02	6.00E+01	---	**7E-04**	4.20E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	1.70E-01	Y	---	3.40E-02	8.00E+02	---	**4E-05**	3.24E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	9.30E-01	Y	---	1.86E-01	3.00E+01	---	**6E-03**	1.77E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	2.25E-01	N	---	4.50E-02	1.00E+00	---	**5E-02**	4.29E-03	4.90E-05		**2E-07**
BROMODICHLOROMETHANE	75-27-4	1.00E+00	Y	---	2.00E-01	NA	---	---	1.91E-02	3.70E-05		**7E-07**
BROMOMETHANE	74-83-9	7.50E-01	N	---	1.50E-01	5.00E+00	---	**3E-02**	1.43E-02	-		---
CARBON TETRACHLORIDE	56-23-5	7.10E-01	Y	---	1.42E-01	1.00E+02	---	**1E-03**	1.35E-02	6.00E-06		**8E-08**
CHLOROFORM	67-66-3	4.20E+00	Y	---	8.40E-01	9.77E+01	---	**9E-03**	8.01E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	1.00E+01	Y	---	2.00E+00	7.00E+01	---	**3E-02**	1.91E-01	-		---
ETHYLBENZENE	100-41-4	2.30E+00	Y	---	4.60E-01	1.00E+03	---	**5E-04**	4.39E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	---	1.50E-01	NA	---	---	1.43E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	1.80E+01	Y	---	3.60E+00	2.00E+02	---	**2E-02**	3.43E-01	-		---
M,P-XYLENE	108-38-3	8.20E+00	Y	---	1.64E+00	1.00E+02	---	**2E-02**	1.56E-01	-		---
METHYLENE CHLORIDE	75-09-2	2.20E+00	Y	---	4.40E-01	6.00E+02	---	**7E-04**	4.20E-02	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	2.90E-02	N	---	5.80E-03	3.00E+00	---	**2E-03**	5.53E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	2.30E+00	Y	---	4.60E-01	1.00E+02	---	**5E-03**	4.39E-02	-		---
TETRACHLOROETHENE	127-18-4	1.70E+00	Y	---	3.40E-01	4.00E+01	---	**9E-03**	3.24E-02	2.60E-07		**8E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	---	1.00E-02	2.00E+00	---	**5E-03**	9.54E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	1.00E-01	Y	---	2.00E-02	8.00E+01	---	**3E-04**	1.91E-03	4.40E-06	M	**8E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0174H**	**Total Inhalation**	---	**3E-01**	**5E-06**
		Based on NDs only	**0E+00**	**2E-01**	**1E-06**
		Based on Detects only	**#VALUE!**	**2E-01**	**4E-06**
		Site-related only	**0E+00**	**2E-02**	**7E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0174H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.20E+00	NA	NA	NA	4.20E-02	1.0E-08		---	---	---	4E-10	**4E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	NA	NA	NA	9.54E-04	1.0E-06	kidney	---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	NA		9.54E-04		3.1E-06	NHL+liver	---		3E-09		**3E-09**
VINYL CHLORIDE	75-01-4	1.00E-01	NA	NA	NA	1.91E-03	4.4E-06		---	---	---	8E-09	**8E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0180H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.65E-02	N	---	5.30E-03	NA	---	---	5.05E-04	5.80E-05		**3E-08**
1,3-BUTADIENE	106-99-0	5.50E-02	N	---	1.10E-02	2.00E+00	---	**6E-03**	1.05E-03	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	1.80E-02	3.00E+01	---	**6E-04**	1.72E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.30E-02	N	---	2.60E-03	2.00E-01	---	**1E-02**	2.48E-04	1.60E-05		**4E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.50E-01	N	---	1.10E-01	2.00E+00	---	**6E-02**	1.05E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.00E-02	N	---	1.20E-02	6.00E+01	---	**2E-04**	1.14E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.70E-02	N	---	9.40E-03	9.00E+00	---	**1E-03**	8.96E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	7.30E-02	Y	---	1.46E-02	7.00E+00	---	**2E-03**	1.39E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	---	2.10E-02	4.00E+00	---	**5E-03**	2.00E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	9.00E-02	N	---	1.80E-02	6.00E+01	---	**3E-04**	1.72E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.95E-02	N	---	9.90E-03	8.00E+02	---	**1E-05**	9.44E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	3.70E-01	Y	---	7.40E-02	3.00E+01	---	**2E-03**	7.06E-03	7.80E-06		**6E-08**
BENZYL CHLORIDE	100-44-7	1.15E-01	N	---	2.30E-02	1.00E+00	---	**2E-02**	2.19E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	1.20E-01	N	---	2.40E-02	NA	---	---	2.29E-03	3.70E-05		**8E-08**
BROMOMETHANE	74-83-9	6.50E-01	N	---	1.30E-01	5.00E+00	---	**3E-02**	1.24E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	---	8.40E-02	1.00E+02	---	**8E-04**	8.01E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	1.30E-01	Y	---	2.60E-02	9.77E+01	---	**3E-04**	2.48E-03	2.30E-05		**6E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	5.60E-02	Y	---	1.12E-02	1.00E+03	---	**1E-05**	1.07E-03	2.50E-06		**3E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.45E-01	N	---	8.90E-02	NA	---	---	8.49E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	1.30E+01	Y	---	2.60E+00	2.00E+02	---	**1E-02**	2.48E-01	-		**---**
M,P-XYLENE	108-38-3	1.90E-01	Y	---	3.80E-02	1.00E+02	---	**4E-04**	3.62E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	6.80E-01	Y	---	1.36E-01	6.00E+02	---	**2E-04**	1.30E-02	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	6.10E-02	Y	---	1.22E-02	1.00E+02	---	**1E-04**	1.16E-03	-		**---**
TETRACHLOROETHENE	127-18-4	4.40E-02	Y	---	8.80E-03	4.00E+01	---	**2E-04**	8.39E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	9.00E-03	N	---	1.80E-03	2.00E+00	---	**9E-04**	1.72E-04	4.10E-06	M	**7E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	4.20E-03	N	---	8.40E-04	8.00E+01	---	**1E-05**	8.01E-05	4.40E-06	M	**4E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0180H**	**Total Inhalation**	**---**	**2E-01**	**1E-06**
		Based on NDs only	**0E+00**	**1E-01**	**1E-06**
		Based on Detects only	**#VALUE!**	**2E-02**	**2E-07**
		Site-related only	**0E+00**	**2E-03**	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0180H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.80E-01	NA	NA	NA	1.30E-02	1.0E-08		---	---	---	1E-10	**1E-10**
TRICHLOROETHENE	79-01-6	9.00E-03	NA	NA	NA	1.72E-04	1.0E-06	kidney	---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	9.00E-03	NA		1.72E-04		3.1E-06	NHL+liver	---		5E-10		**5E-10**
VINYL CHLORIDE	75-01-4	4.20E-03	NA	NA	NA	8.01E-05	4.4E-06		---	---	---	4E-10	**4E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0189H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	---	2.10E-03	NA	---	---	2.00E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	4.95E-02	N	---	9.90E-03	2.00E+00	---	**5E-03**	9.44E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	7.00E-02	N	---	1.40E-02	3.00E+01	---	**5E-04**	1.34E-03	5.00E-06		**7E-09**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	---	1.40E-03	2.00E-01	---	**7E-03**	1.34E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.85E-01	N	---	9.70E-02	2.00E+00	---	**5E-02**	9.25E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.30E-01	Y	---	2.60E-02	6.00E+01	---	**4E-04**	2.48E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	---	6.60E-03	9.00E+00	---	**7E-04**	6.29E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	7.40E-02	Y	---	1.48E-02	7.00E+00	---	**2E-03**	1.41E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	---	1.80E-02	4.00E+00	---	**5E-03**	1.72E-03	3.70E-06		**6E-09**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	---	1.20E-02	6.00E+01	---	**2E-04**	1.14E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	---	1.00E-02	8.00E+02	---	**1E-05**	9.54E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	4.10E-01	Y	---	8.20E-02	3.00E+01	---	**3E-03**	7.82E-03	7.80E-06		**6E-08**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	---	1.70E-02	1.00E+00	---	**2E-02**	1.62E-03	4.90E-05		**8E-08**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	---	2.50E-02	NA	---	---	2.38E-03	3.70E-05		**9E-08**
BROMOMETHANE	74-83-9	6.50E-01	N	---	1.30E-01	5.00E+00	---	**3E-02**	1.24E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	---	9.40E-02	1.00E+02	---	**9E-04**	8.96E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	8.40E-01	Y	---	1.68E-01	9.77E+01	---	**2E-03**	1.60E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.70E-01	Y	---	3.40E-02	1.00E+03	---	**3E-05**	3.24E-03	2.50E-06		**8E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	---	1.30E-01	NA	---	---	1.24E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	2.40E+02	Y	---	4.80E+01	2.00E+02	---	**2E-01**	4.58E+00	-		---
M,P-XYLENE	108-38-3	4.80E-01	Y	---	9.60E-02	1.00E+02	---	**1E-03**	9.15E-03	-		---
METHYLENE CHLORIDE	75-09-2	2.15E-01	N	---	4.30E-02	6.00E+02	---	**7E-05**	4.10E-03	1.00E-08	M	**4E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.70E-01	Y	---	3.40E-02	1.00E+02	---	**3E-04**	3.24E-03	-		---
TETRACHLOROETHENE	127-18-4	2.60E+00	Y	---	5.20E-01	4.00E+01	---	**1E-02**	4.96E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	1.90E-01	Y	---	3.80E-02	2.00E+00	---	**2E-02**	3.62E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.00E-03	N	---	1.60E-03	8.00E+01	---	**2E-05**	1.53E-04	4.40E-06	M	**7E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0189H**	**Total Inhalation**	---	**4E-01**	**1E-06**
		Based on NDs only	**0E+00**	**1E-01**	**9E-07**
		Based on Detects only	**#VALUE!**	**3E-01**	**6E-07**
		Site-related only	**0E+00**	**3E-02**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0189H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.15E-01	NA	NA	NA	4.10E-03	1.0E-08		---	---	---	4E-11	**4E-11**
TRICHLOROETHENE	79-01-6	1.90E-01	NA	NA	NA	3.62E-03	1.0E-06	kidney	---	---	---	4E-09	**4E-09**
TRICHLOROETHENE	79-01-6	1.90E-01	NA		3.62E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	8.00E-03	NA	NA	NA	1.53E-04	4.4E-06		---	---	---	7E-10	**7E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0192H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	---	2.20E-03	NA	---	---	2.10E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	5.00E-02	N	---	1.00E-02	2.00E+00	---	**5E-03**	9.54E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	7.50E-02	N	---	1.50E-02	3.00E+01	---	**5E-04**	1.43E-03	5.00E-06		**7E-09**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	---	1.50E-03	2.00E-01	---	**8E-03**	1.43E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	---	1.00E-01	2.00E+00	---	**5E-02**	9.54E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.30E-01	Y	---	2.60E-02	6.00E+01	---	**4E-04**	2.48E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.50E-02	N	---	7.00E-03	9.00E+00	---	**8E-04**	6.68E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	---	1.54E-02	7.00E+00	---	**2E-03**	1.47E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	1.90E-02	4.00E+00	---	**5E-03**	1.81E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	---	1.20E-02	6.00E+01	---	**2E-04**	1.14E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	---	1.10E-02	8.00E+02	---	**1E-05**	1.05E-03	1.10E-05		**1E-08**
BENZENE	71-43-2	1.10E+00	Y	---	2.20E-01	3.00E+01	---	**7E-03**	2.10E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	---	1.80E-02	1.00E+00	---	**2E-02**	1.72E-03	4.90E-05		**8E-08**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	---	2.60E-02	NA	---	---	2.48E-03	3.70E-05		**9E-08**
BROMOMETHANE	74-83-9	7.00E-01	N	---	1.40E-01	5.00E+00	---	**3E-02**	1.34E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	---	9.40E-02	1.00E+02	---	**9E-04**	8.96E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	1.30E+00	Y	---	2.60E-01	9.77E+01	---	**3E-03**	2.48E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.00E-01	Y	---	4.00E-02	1.00E+03	---	**4E-05**	3.81E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	---	1.40E-01	NA	---	---	1.34E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	1.20E+01	Y	---	2.40E+00	2.00E+02	---	**1E-02**	2.29E-01	-		---
M,P-XYLENE	108-38-3	6.00E-01	Y	---	1.20E-01	1.00E+02	---	**1E-03**	1.14E-02	-		---
METHYLENE CHLORIDE	75-09-2	2.25E-01	N	---	4.50E-02	6.00E+02	---	**8E-05**	4.29E-03	1.00E-08	M	**4E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.20E-01	Y	---	4.40E-02	1.00E+02	---	**4E-04**	4.20E-03	-		---
TETRACHLOROETHENE	127-18-4	1.60E+01	Y	---	3.20E+00	4.00E+01	---	**8E-02**	3.05E-01	2.60E-07		**8E-08**
TRICHLOROETHENE	79-01-6	4.30E-01	Y	---	8.60E-02	2.00E+00	---	**4E-02**	8.20E-03	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.50E-03	N	---	1.70E-03	8.00E+01	---	**2E-05**	1.62E-04	4.40E-06	M	**7E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0192H**	**Total Inhalation**	---	**3E-01**	**2E-06**
		Based on NDs only	**0E+00**	**1E-01**	**9E-07**
		Based on Detects only	**#VALUE!**	**2E-01**	**9E-07**
		Site-related only	**0E+00**	**1E-01**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0192H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.25E-01	NA	NA	NA	4.29E-03	1.0E-08		---	---	---	4E-11	**4E-11**
TRICHLOROETHENE	79-01-6	4.30E-01	NA	NA	NA	8.20E-03	1.0E-06	kidney	---	---	---	8E-09	**8E-09**
TRICHLOROETHENE	79-01-6	4.30E-01	NA		8.20E-03		3.1E-06	NHL+liver	---		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	8.50E-03	NA	NA	NA	1.62E-04	4.4E-06		---	---	---	7E-10	**7E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0193H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	---	1.37E-02	NA	---	---	1.31E-03	5.80E-05		**8E-08**
1,3-BUTADIENE	106-99-0	2.22E+00	N	---	4.43E-01	2.00E+00	---	**2E-01**	4.22E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	---	7.21E-02	3.00E+01	---	**2E-03**	6.88E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	---	1.63E-02	2.00E-01	---	**8E-02**	1.55E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	---	4.66E-01	2.00E+00	---	**2E-01**	4.44E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	---	9.82E-02	6.00E+01	---	**2E-03**	9.36E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	---	1.54E-02	9.00E+00	---	**2E-03**	1.47E-03	6.00E-04		**9E-07**
1,2-DICHLOROETHANE	107-06-2	1.02E-01	Y	---	2.04E-02	7.00E+00	---	**3E-03**	1.95E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	---	1.39E-02	4.00E+00	---	**3E-03**	1.33E-03	3.70E-06		**5E-09**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	---	9.82E-02	6.00E+01	---	**2E-03**	9.36E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	---	1.20E-02	8.00E+02	---	**2E-05**	1.14E-03	1.10E-05		**1E-08**
BENZENE	71-43-2	4.89E-01	Y	---	9.78E-02	3.00E+01	---	**3E-03**	9.33E-03	7.80E-06		**7E-08**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	---	1.04E-01	1.00E+00	---	**1E-01**	9.92E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	---	1.34E-01	NA	---	---	1.28E-02	3.70E-05		**5E-07**
BROMOMETHANE	74-83-9	3.88E-01	N	---	7.76E-02	5.00E+00	---	**2E-02**	7.40E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.74E-01	Y	---	1.15E-01	1.00E+02	---	**1E-03**	1.09E-02	6.00E-06		**7E-08**
CHLOROFORM	67-66-3	1.55E+00	Y	---	3.10E-01	9.77E+01	---	**3E-03**	2.96E-02	2.30E-05		**7E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.86E-01	Y	---	3.72E-02	1.00E+03	---	**4E-05**	3.55E-03	2.50E-06		**9E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	---	6.73E-01	NA	---	---	6.42E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.15E+01	Y	---	2.30E+00	2.00E+02	---	**1E-02**	2.19E-01	-		**---**
M,P-XYLENE	108-38-3	6.76E-01	Y	---	1.35E-01	1.00E+02	---	**1E-03**	1.29E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	6.74E-01	Y	---	1.35E-01	6.00E+02	---	**2E-04**	1.29E-02	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	---	3.30E-01	3.00E+00	---	**1E-01**	3.15E-02	3.40E-05		**1E-06**
O-XYLENE	95-47-6	4.34E-01	N	---	8.67E-02	1.00E+02	---	**9E-04**	8.27E-03	-		**---**
TETRACHLOROETHENE	127-18-4	3.82E+00	Y	---	7.64E-01	4.00E+01	---	**2E-02**	7.29E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	7.18E-01	Y	---	1.44E-01	2.00E+00	---	**7E-02**	1.37E-02	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	---	7.04E-03	2.00E+02	---	**4E-05**	6.71E-04	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	---	5.11E-03	8.00E+01	---	**6E-05**	4.87E-04	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0193H**	**Total Inhalation**	**---**	**9E-01**	**7E-06**
		Based on NDs only	**0E+00**	**8E-01**	**6E-06**
		Based on Detects only	**#VALUE!**	**1E-01**	**1E-06**
		Site-related only	**0E+00**	**9E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0193H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.74E-01	NA	NA	NA	1.29E-02	1.0E-08		---	---	---	1E-10	**1E-10**
TRICHLOROETHENE	79-01-6	7.18E-01	NA	NA	NA	1.37E-02	1.0E-06	kidney	---	---	---	1E-08	**1E-08**
TRICHLOROETHENE	79-01-6	7.18E-01	NA		1.37E-02		3.1E-06	NHL+liver	---		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	NA	NA	NA	4.87E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0194H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime		
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02		

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	---	1.37E-02	NA	---	---	1.31E-03	5.80E-05		**8E-08**
1,3-BUTADIENE	106-99-0	2.22E+00	N	---	4.43E-01	2.00E+00	---	**2E-01**	4.22E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	---	7.21E-02	3.00E+01	---	**2E-03**	6.88E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	---	1.63E-02	2.00E-01	---	**8E-02**	1.55E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	---	4.66E-01	2.00E+00	---	**2E-01**	4.44E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	---	9.82E-02	6.00E+01	---	**2E-03**	9.36E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	---	1.54E-02	9.00E+00	---	**2E-03**	1.47E-03	6.00E-04		**9E-07**
1,2-DICHLOROETHANE	107-06-2	1.22E-01	Y	---	2.44E-02	7.00E+00	---	**3E-03**	2.33E-03	2.60E-05		**6E-08**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	---	1.39E-02	4.00E+00	---	**3E-03**	1.33E-03	3.70E-06		**5E-09**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	---	9.82E-02	6.00E+01	---	**2E-03**	9.36E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	---	1.20E-02	8.00E+02	---	**2E-05**	1.14E-03	1.10E-05		**1E-08**
BENZENE	71-43-2	5.69E-01	Y	---	1.14E-01	3.00E+01	---	**4E-03**	1.09E-02	7.80E-06		**8E-08**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	---	1.04E-01	1.00E+00	---	**1E-01**	9.92E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	---	1.34E-01	NA	---	---	1.28E-02	3.70E-05		**5E-07**
BROMOMETHANE	74-83-9	3.88E-01	N	---	7.76E-02	5.00E+00	---	**2E-02**	7.40E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.46E-01	Y	---	1.09E-01	1.00E+02	---	**1E-03**	1.04E-02	6.00E-06		**6E-08**
CHLOROFORM	67-66-3	7.40E-01	Y	---	1.48E-01	9.77E+01	---	**2E-03**	1.41E-02	2.30E-05		**3E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	4.23E-01	Y	---	8.46E-02	1.00E+03	---	**8E-05**	8.07E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	---	6.73E-01	NA	---	---	6.42E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	9.27E+00	Y	---	1.85E+00	2.00E+02	---	**9E-03**	1.77E-01	-		**---**
M,P-XYLENE	108-38-3	1.14E+00	Y	---	2.28E-01	1.00E+02	---	**2E-03**	2.17E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	6.67E-01	Y	---	1.33E-01	6.00E+02	---	**2E-04**	1.27E-02	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	---	3.30E-01	3.00E+00	---	**1E-01**	3.15E-02	3.40E-05		**1E-06**
O-XYLENE	95-47-6	4.34E-01	N	---	8.67E-02	1.00E+02	---	**9E-04**	8.27E-03	-		**---**
TETRACHLOROETHENE	127-18-4	1.06E+01	Y	---	2.12E+00	4.00E+01	---	**5E-02**	2.02E-01	2.60E-07		**5E-08**
TRICHLOROETHENE	79-01-6	7.18E-01	Y	---	1.44E-01	2.00E+00	---	**7E-02**	1.37E-02	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	---	7.04E-03	2.00E+02	---	**4E-05**	6.71E-04	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	---	5.11E-03	8.00E+01	---	**6E-05**	4.87E-04	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0194H**	**Total Inhalation**	**---**	**9E-01**	**6E-06**
		Based on NDs only	**0E+00**	**8E-01**	**6E-06**
		Based on Detects only	**#VALUE!**	**1E-01**	**7E-07**
		Site-related only	**0E+00**	**1E-01**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0194H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.67E-01	NA	NA	NA	1.27E-02	1.0E-08		---	---	---	1E-10	**1E-10**
TRICHLOROETHENE	79-01-6	7.18E-01	NA	NA	NA	1.37E-02	1.0E-06	kidney	---	---	---	1E-08	**1E-08**
TRICHLOROETHENE	79-01-6	7.18E-01	NA		1.37E-02		3.1E-06	NHL+liver	---		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	NA	NA	NA	4.87E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0195H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	---	1.37E-02	NA	---	---	1.31E-03	5.80E-05		**8E-08**
1,3-BUTADIENE	106-99-0	2.22E+00	N	---	4.43E-01	2.00E+00	---	**2E-01**	4.22E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	---	7.21E-02	3.00E+01	---	**2E-03**	6.88E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	---	1.63E-02	2.00E-01	---	**8E-02**	1.55E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	---	4.66E-01	2.00E+00	---	**2E-01**	4.44E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.35E+00	Y	---	1.07E+00	6.00E+01	---	**2E-02**	1.02E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	---	1.54E-02	9.00E+00	---	**2E-03**	1.47E-03	6.00E-04		**9E-07**
1,2-DICHLOROETHANE	107-06-2	1.24E-01	Y	---	2.48E-02	7.00E+00	---	**4E-03**	2.36E-03	2.60E-05		**6E-08**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	---	1.39E-02	4.00E+00	---	**3E-03**	1.33E-03	3.70E-06		**5E-09**
1,3,5-Trimethylbenzene	108-67-8	1.59E+00	Y	---	3.18E-01	6.00E+01	---	**5E-03**	3.03E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	---	1.20E-02	8.00E+02	---	**2E-05**	1.14E-03	1.10E-05		**1E-08**
BENZENE	71-43-2	6.26E-01	Y	---	1.25E-01	3.00E+01	---	**4E-03**	1.19E-02	7.80E-06		**9E-08**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	---	1.04E-01	1.00E+00	---	**1E-01**	9.92E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	---	1.34E-01	NA	---	---	1.28E-02	3.70E-05		**5E-07**
BROMOMETHANE	74-83-9	3.88E-01	N	---	7.76E-02	5.00E+00	---	**2E-02**	7.40E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.96E-01	Y	---	9.92E-02	1.00E+02	---	**1E-03**	9.46E-03	6.00E-06		**6E-08**
CHLOROFORM	67-66-3	5.55E-01	Y	---	1.11E-01	9.77E+01	---	**1E-03**	1.06E-02	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	7.33E-01	Y	---	1.47E-01	1.00E+03	---	**1E-04**	1.40E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	---	6.73E-01	NA	---	---	6.42E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	2.05E+01	Y	---	4.10E+00	2.00E+02	---	**2E-02**	3.91E-01	-		**---**
M,P-XYLENE	108-38-3	2.76E+00	Y	---	5.52E-01	1.00E+02	---	**6E-03**	5.26E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	5.69E-01	Y	---	1.14E-01	6.00E+02	---	**2E-04**	1.09E-02	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	---	3.30E-01	3.00E+00	---	**1E-01**	3.15E-02	3.40E-05		**1E-06**
O-XYLENE	95-47-6	1.44E+00	Y	---	2.88E-01	1.00E+02	---	**3E-03**	2.75E-02	-		**---**
TETRACHLOROETHENE	127-18-4	2.27E+00	Y	---	4.54E-01	4.00E+01	---	**1E-02**	4.33E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	5.95E-02	Y	---	1.19E-02	2.00E+00	---	**6E-03**	1.13E-03	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	3.52E-02	N	---	7.04E-03	2.00E+02	---	**4E-05**	6.71E-04	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	---	5.11E-03	8.00E+01	---	**6E-05**	4.87E-04	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0195H**	**Total Inhalation**	**---**	**9E-01**	**6E-06**
		Based on NDs only	**0E+00**	**8E-01**	**6E-06**
		Based on Detects only	**#VALUE!**	**8E-02**	**5E-07**
		Site-related only	**0E+00**	**2E-02**	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0195H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.69E-01	NA	NA	NA	1.09E-02	1.0E-08		---	---	---	1E-10	**1E-10**
TRICHLOROETHENE	79-01-6	5.95E-02	NA	NA	NA	1.13E-03	1.0E-06	kidney	---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	5.95E-02	NA		1.13E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	2.56E-02	NA	NA	NA	4.87E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0197H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.50E-02	N	---	5.00E-03	NA	---	---	4.77E-04	5.80E-05		**3E-08**
1,3-BUTADIENE	106-99-0	5.00E-02	N	---	1.00E-02	2.00E+00	---	**5E-03**	9.54E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	8.50E-02	N	---	1.70E-02	3.00E+01	---	**6E-04**	1.62E-03	5.00E-06		**8E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	---	2.40E-03	2.00E-01	---	**1E-02**	2.29E-04	1.60E-05		**4E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	---	1.00E-01	2.00E+00	---	**5E-02**	9.54E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.20E-01	Y	---	4.40E-02	6.00E+01	---	**7E-04**	4.20E-03	-		---
1,2-DIBROMOETHANE	106-93-4	4.45E-02	N	---	8.90E-03	9.00E+00	---	**1E-03**	8.49E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	8.50E-02	Y	---	1.70E-02	7.00E+00	---	**2E-03**	1.62E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	---	2.00E-02	4.00E+00	---	**5E-03**	1.91E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	8.50E-02	N	---	1.70E-02	6.00E+01	---	**3E-04**	1.62E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	2.10E-01	Y	---	4.20E-02	8.00E+02	---	**5E-05**	4.01E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	4.30E-01	Y	---	8.60E-02	3.00E+01	---	**3E-03**	8.20E-03	7.80E-06		**6E-08**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	---	2.20E-02	1.00E+00	---	**2E-02**	2.10E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	---	2.20E-02	NA	---	---	2.10E-03	3.70E-05		**8E-08**
BROMOMETHANE	74-83-9	6.00E-01	N	---	1.20E-01	5.00E+00	---	**2E-02**	1.14E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	---	8.80E-02	1.00E+02	---	**9E-04**	8.39E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	1.10E+00	Y	---	2.20E-01	9.77E+01	---	**2E-03**	2.10E-02	2.30E-05		**5E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	3.50E-01	Y	---	7.00E-02	1.00E+03	---	**7E-05**	6.68E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.25E-01	N	---	8.50E-02	NA	---	---	8.11E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	2.90E+01	Y	---	5.80E+00	2.00E+02	---	**3E-02**	5.53E-01	-		---
M,P-XYLENE	108-38-3	1.20E+00	Y	---	2.40E-01	1.00E+02	---	**2E-03**	2.29E-02	-		---
METHYLENE CHLORIDE	75-09-2	4.80E-01	Y	---	9.60E-02	6.00E+02	---	**2E-04**	9.15E-03	1.00E-08	M	**9E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.10E-01	Y	---	6.20E-02	1.00E+02	---	**6E-04**	5.91E-03	-		---
TETRACHLOROETHENE	127-18-4	2.30E+01	Y	---	4.60E+00	4.00E+01	---	**1E-01**	4.39E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	5.80E+00	Y	---	1.16E+00	2.00E+00	---	**6E-01**	1.11E-01	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	3.95E-03	N	---	7.90E-04	8.00E+01	---	**1E-05**	7.53E-05	4.40E-06	M	**3E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0197H**	**Total Inhalation**	---	**9E-01**	**2E-06**
		Based on NDs only	**0E+00**	**1E-01**	**9E-07**
		Based on Detects only	**#VALUE!**	**7E-01**	**1E-06**
		Site-related only	**0E+00**	**7E-01**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0197H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.80E-01	NA	NA	NA	9.15E-03	1.0E-08		---	---	---	9E-11	**9E-11**
TRICHLOROETHENE	79-01-6	5.80E+00	NA	NA	NA	1.11E-01	1.0E-06	kidney	---	---	---	1E-07	**1E-07**
TRICHLOROETHENE	79-01-6	5.80E+00	NA		1.11E-01		3.1E-06	NHL+liver	---		3E-07		**3E-07**
VINYL CHLORIDE	75-01-4	3.95E-03	NA	NA	NA	7.53E-05	4.4E-06		---	---	---	3E-10	**3E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0225H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	---	1.37E-02	NA	---	---	1.31E-03	5.80E-05		**8E-08**
1,3-BUTADIENE	106-99-0	2.22E+00	N	---	4.43E-01	2.00E+00	---	**2E-01**	4.22E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	---	7.21E-02	3.00E+01	---	**2E-03**	6.88E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	---	1.63E-02	2.00E-01	---	**8E-02**	1.55E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	---	4.66E-01	2.00E+00	---	**2E-01**	4.44E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	---	9.82E-02	6.00E+01	---	**2E-03**	9.36E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	---	1.54E-02	9.00E+00	---	**2E-03**	1.47E-03	6.00E-04		**9E-07**
1,2-DICHLOROETHANE	107-06-2	3.26E-01	Y	---	6.52E-02	7.00E+00	---	**9E-03**	6.22E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	---	1.39E-02	4.00E+00	---	**3E-03**	1.33E-03	3.70E-06		**5E-09**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	---	9.82E-02	6.00E+01	---	**2E-03**	9.36E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.80E-01	Y	---	1.96E-01	8.00E+02	---	**2E-04**	1.87E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	5.21E-01	Y	---	1.04E-01	3.00E+01	---	**3E-03**	9.94E-03	7.80E-06		**8E-08**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	---	1.04E-01	1.00E+00	---	**1E-01**	9.92E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	---	1.34E-01	NA	---	---	1.28E-02	3.70E-05		**5E-07**
BROMOMETHANE	74-83-9	3.88E-01	N	---	7.76E-02	5.00E+00	---	**2E-02**	7.40E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	6.87E-01	Y	---	1.37E-01	1.00E+02	---	**1E-03**	1.31E-02	6.00E-06		**8E-08**
CHLOROFORM	67-66-3	3.59E-01	Y	---	7.18E-02	9.77E+01	---	**7E-04**	6.85E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	6.29E-01	Y	---	1.26E-01	1.00E+03	---	**1E-04**	1.20E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	---	6.73E-01	NA	---	---	6.42E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.24E+01	Y	---	2.48E+00	2.00E+02	---	**1E-02**	2.36E-01	-		**---**
M,P-XYLENE	108-38-3	2.17E+00	Y	---	4.34E-01	1.00E+02	---	**4E-03**	4.14E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	7.43E-01	Y	---	1.49E-01	6.00E+02	---	**2E-04**	1.42E-02	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	---	3.30E-01	3.00E+00	---	**1E-01**	3.15E-02	3.40E-05		**1E-06**
O-XYLENE	95-47-6	7.24E-01	Y	---	1.45E-01	1.00E+02	---	**1E-03**	1.38E-02	-		**---**
TETRACHLOROETHENE	127-18-4	2.57E-01	Y	---	5.14E-02	4.00E+01	---	**1E-03**	4.90E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	6.54E-02	Y	---	1.31E-02	2.00E+00	---	**7E-03**	1.25E-03	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	3.52E-02	N	---	7.04E-03	2.00E+02	---	**4E-05**	6.71E-04	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	---	5.11E-03	8.00E+01	---	**6E-05**	4.87E-04	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0225H**	**Total Inhalation**	**---**	**8E-01**	**6E-06**
		Based on NDs only	**0E+00**	**8E-01**	**6E-06**
		Based on Detects only	**#VALUE!**	**4E-02**	**7E-07**
		Site-related only	**0E+00**	**1E-02**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0225H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.43E-01	NA	NA	NA	1.42E-02	1.0E-08		---	---	---	1E-10	**1E-10**
TRICHLOROETHENE	79-01-6	6.54E-02	NA	NA	NA	1.25E-03	1.0E-06	kidney	---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	6.54E-02	NA		1.25E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	2.56E-02	NA	NA	NA	4.87E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0230H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	---	2.10E-03	NA	---	---	2.00E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	4.95E-02	N	---	9.90E-03	2.00E+00	---	**5E-03**	9.44E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	7.00E-02	N	---	1.40E-02	3.00E+01	---	**5E-04**	1.34E-03	5.00E-06		**7E-09**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	---	1.40E-03	2.00E-01	---	**7E-03**	1.34E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.85E-01	N	---	9.70E-02	2.00E+00	---	**5E-02**	9.25E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.90E-01	Y	---	3.80E-02	6.00E+01	---	**6E-04**	3.62E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	---	6.60E-03	9.00E+00	---	**7E-04**	6.29E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	---	2.80E-02	7.00E+00	---	**4E-03**	2.67E-03	2.60E-05		**7E-08**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	---	1.80E-02	4.00E+00	---	**5E-03**	1.72E-03	3.70E-06		**6E-09**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	---	1.20E-02	6.00E+01	---	**2E-04**	1.14E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	---	1.00E-02	8.00E+02	---	**1E-05**	9.54E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	5.30E-01	Y	---	1.06E-01	3.00E+01	---	**4E-03**	1.01E-02	7.80E-06		**8E-08**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	---	1.70E-02	1.00E+00	---	**2E-02**	1.62E-03	4.90E-05		**8E-08**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	---	2.50E-02	NA	---	---	2.38E-03	3.70E-05		**9E-08**
BROMOMETHANE	74-83-9	6.50E-01	N	---	1.30E-01	5.00E+00	---	**3E-02**	1.24E-02	-		---
CARBON TETRACHLORIDE	56-23-5	3.90E-01	Y	---	7.80E-02	1.00E+02	---	**8E-04**	7.44E-03	6.00E-06		**4E-08**
CHLOROFORM	67-66-3	9.60E-01	Y	---	1.92E-01	9.77E+01	---	**2E-03**	1.83E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.50E-01	Y	---	3.00E-02	1.00E+03	---	**3E-05**	2.86E-03	2.50E-06		**7E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	---	1.30E-01	NA	---	---	1.24E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	5.50E+01	Y	---	1.10E+01	2.00E+02	---	**6E-02**	1.05E+00	-		---
M,P-XYLENE	108-38-3	5.20E-01	Y	---	1.04E-01	1.00E+02	---	**1E-03**	9.92E-03	-		---
METHYLENE CHLORIDE	75-09-2	2.75E-01	N	---	5.50E-02	6.00E+02	---	**9E-05**	5.24E-03	1.00E-08	M	**5E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.00E-01	Y	---	4.00E-02	1.00E+02	---	**4E-04**	3.81E-03	-		---
TETRACHLOROETHENE	127-18-4	4.80E-02	Y	---	9.60E-03	4.00E+01	---	**2E-04**	9.15E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	1.65E-02	N	---	3.30E-03	2.00E+00	---	**2E-03**	3.15E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.00E-03	N	---	1.60E-03	8.00E+01	---	**2E-05**	1.53E-04	4.40E-06	M	**7E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0230H**	**Total Inhalation**	---	**2E-01**	**2E-06**
		Based on NDs only	**0E+00**	**1E-01**	**9E-07**
		Based on Detects only	**#VALUE!**	**7E-02**	**6E-07**
		Site-related only	**0E+00**	**2E-03**	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0230H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.75E-01	NA	NA	NA	5.24E-03	1.0E-08		---	---	---	5E-11	**5E-11**
TRICHLOROETHENE	79-01-6	1.65E-02	NA	NA	NA	3.15E-04	1.0E-06	kidney	---	---	---	3E-10	**3E-10**
TRICHLOROETHENE	79-01-6	1.65E-02	NA		3.15E-04		3.1E-06	NHL+liver	---		1E-09		**1E-09**
VINYL CHLORIDE	75-01-4	8.00E-03	NA	NA	NA	1.53E-04	4.4E-06		---	---	---	7E-10	**7E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0255H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	---	1.37E-02	NA	---	---	1.31E-03	5.80E-05		**8E-08**
1,3-BUTADIENE	106-99-0	2.22E+00	N	---	4.43E-01	2.00E+00	---	**2E-01**	4.22E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	---	7.21E-02	3.00E+01	---	**2E-03**	6.88E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	---	1.63E-02	2.00E-01	---	**8E-02**	1.55E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	---	4.66E-01	2.00E+00	---	**2E-01**	4.44E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	---	9.82E-02	6.00E+01	---	**2E-03**	9.36E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	---	1.54E-02	9.00E+00	---	**2E-03**	1.47E-03	6.00E-04		**9E-07**
1,2-DICHLOROETHANE	107-06-2	1.41E-01	Y	---	2.82E-02	7.00E+00	---	**4E-03**	2.69E-03	2.60E-05		**7E-08**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	---	1.39E-02	4.00E+00	---	**3E-03**	1.33E-03	3.70E-06		**5E-09**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	---	9.82E-02	6.00E+01	---	**2E-03**	9.36E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.77E-02	Y	---	1.15E-02	8.00E+02	---	**1E-05**	1.10E-03	1.10E-05		**1E-08**
BENZENE	71-43-2	6.71E-01	Y	---	1.34E-01	3.00E+01	---	**4E-03**	1.28E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	---	1.04E-01	1.00E+00	---	**1E-01**	9.92E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	---	1.34E-01	NA	---	---	1.28E-02	3.70E-05		**5E-07**
BROMOMETHANE	74-83-9	3.88E-01	N	---	7.76E-02	5.00E+00	---	**2E-02**	7.40E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.87E-01	Y	---	9.74E-02	1.00E+02	---	**1E-03**	9.29E-03	6.00E-06		**6E-08**
CHLOROFORM	67-66-3	1.47E+00	Y	---	2.94E-01	9.77E+01	---	**3E-03**	2.80E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.02E-01	Y	---	4.04E-02	1.00E+03	---	**4E-05**	3.85E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	---	6.73E-01	NA	---	---	6.42E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	2.15E+00	Y	---	4.30E-01	2.00E+02	---	**2E-03**	4.10E-02	-		**---**
M,P-XYLENE	108-38-3	8.65E-01	N	---	1.73E-01	1.00E+02	---	**2E-03**	1.65E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	8.82E-01	Y	---	1.76E-01	6.00E+02	---	**3E-04**	1.68E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	---	3.30E-01	3.00E+00	---	**1E-01**	3.15E-02	3.40E-05		**1E-06**
O-XYLENE	95-47-6	4.34E-01	N	---	8.67E-02	1.00E+02	---	**9E-04**	8.27E-03	-		**---**
TETRACHLOROETHENE	127-18-4	2.69E+00	Y	---	5.38E-01	4.00E+01	---	**1E-02**	5.13E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	1.91E-01	Y	---	3.82E-02	2.00E+00	---	**2E-02**	3.64E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	---	7.04E-03	2.00E+02	---	**4E-05**	6.71E-04	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	---	5.11E-03	8.00E+01	---	**6E-05**	4.87E-04	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0255H**	**Total Inhalation**	**---**	**8E-01**	**7E-06**
		Based on NDs only	**0E+00**	**8E-01**	**6E-06**
		Based on Detects only	**#VALUE!**	**5E-02**	**9E-07**
		Site-related only	**0E+00**	**4E-02**	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0255H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.82E-01	NA	NA	NA	1.68E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	1.91E-01	NA	NA	NA	3.64E-03	1.0E-06	kidney	---	---	---	4E-09	**4E-09**
TRICHLOROETHENE	79-01-6	1.91E-01	NA		3.64E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	NA	NA	NA	4.87E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0256H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	---	1.37E-02	NA	---	---	1.31E-03	5.80E-05		**8E-08**
1,3-BUTADIENE	106-99-0	2.22E+00	N	---	4.43E-01	2.00E+00	---	**2E-01**	4.22E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	---	7.21E-02	3.00E+01	---	**2E-03**	6.88E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	---	1.63E-02	2.00E-01	---	**8E-02**	1.55E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	---	4.66E-01	2.00E+00	---	**2E-01**	4.44E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	---	9.82E-02	6.00E+01	---	**2E-03**	9.36E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	---	1.54E-02	9.00E+00	---	**2E-03**	1.47E-03	6.00E-04		**9E-07**
1,2-DICHLOROETHANE	107-06-2	1.04E-01	Y	---	2.08E-02	7.00E+00	---	**3E-03**	1.98E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	---	1.39E-02	4.00E+00	---	**3E-03**	1.33E-03	3.70E-06		**5E-09**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	---	9.82E-02	6.00E+01	---	**2E-03**	9.36E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.91E-02	Y	---	1.38E-02	8.00E+02	---	**2E-05**	1.32E-03	1.10E-05		**1E-08**
BENZENE	71-43-2	5.72E-01	Y	---	1.14E-01	3.00E+01	---	**4E-03**	1.09E-02	7.80E-06		**9E-08**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	---	1.04E-01	1.00E+00	---	**1E-01**	9.92E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	---	1.34E-01	NA	---	---	1.28E-02	3.70E-05		**5E-07**
BROMOMETHANE	74-83-9	3.88E-01	N	---	7.76E-02	5.00E+00	---	**2E-02**	7.40E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.86E-01	Y	---	9.72E-02	1.00E+02	---	**1E-03**	9.27E-03	6.00E-06		**6E-08**
CHLOROFORM	67-66-3	3.49E-01	Y	---	6.98E-02	9.77E+01	---	**7E-04**	6.66E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.68E-01	Y	---	3.36E-02	1.00E+03	---	**3E-05**	3.20E-03	2.50E-06		**8E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	---	6.73E-01	NA	---	---	6.42E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	2.07E+00	Y	---	4.14E-01	2.00E+02	---	**2E-03**	3.95E-02	-		**---**
M,P-XYLENE	108-38-3	6.85E-01	Y	---	1.37E-01	1.00E+02	---	**1E-03**	1.31E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	6.77E-01	Y	---	1.35E-01	6.00E+02	---	**2E-04**	1.29E-02	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	---	3.30E-01	3.00E+00	---	**1E-01**	3.15E-02	3.40E-05		**1E-06**
O-XYLENE	95-47-6	4.34E-01	N	---	8.67E-02	1.00E+02	---	**9E-04**	8.27E-03	-		**---**
TETRACHLOROETHENE	127-18-4	1.84E-01	Y	---	3.68E-02	4.00E+01	---	**9E-04**	3.51E-03	2.60E-07		**9E-10**
TRICHLOROETHENE	79-01-6	6.16E-02	Y	---	1.23E-02	2.00E+00	---	**6E-03**	1.17E-03	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	3.52E-02	N	---	7.04E-03	2.00E+02	---	**4E-05**	6.71E-04	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	---	5.11E-03	8.00E+01	---	**6E-05**	4.87E-04	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0256H**	**Total Inhalation**	**---**	**8E-01**	**6E-06**
		Based on NDs only	**0E+00**	**8E-01**	**6E-06**
		Based on Detects only	**#VALUE!**	**2E-02**	**4E-07**
		Site-related only	**0E+00**	**1E-02**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0256H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.77E-01	NA	NA	NA	1.29E-02	1.0E-08		---	---	---	1E-10	**1E-10**
TRICHLOROETHENE	79-01-6	6.16E-02	NA	NA	NA	1.17E-03	1.0E-06	kidney	---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	6.16E-02	NA		1.17E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	2.56E-02	NA	NA	NA	4.87E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0263H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	---	1.37E-02	NA	---	---	1.31E-03	5.80E-05		**8E-08**
1,3-BUTADIENE	106-99-0	2.22E+01	N	---	4.43E+00	2.00E+00	---	**2E+00**	4.22E-01	3.00E-05		**1E-05**
1,4-DIOXANE	123-91-1	3.61E-01	N	---	7.21E-02	3.00E+01	---	**2E-03**	6.88E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	---	1.63E-02	2.00E-01	---	**8E-02**	1.55E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	---	4.66E-01	2.00E+00	---	**2E-01**	4.44E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	6.53E-01	Y	---	1.31E-01	6.00E+01	---	**2E-03**	1.25E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	---	1.54E-02	9.00E+00	---	**2E-03**	1.47E-03	6.00E-04		**9E-07**
1,2-DICHLOROETHANE	107-06-2	2.88E-01	Y	---	5.76E-02	7.00E+00	---	**8E-03**	5.49E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	---	1.39E-02	4.00E+00	---	**3E-03**	1.33E-03	3.70E-06		**5E-09**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	---	9.82E-02	6.00E+01	---	**2E-03**	9.36E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	6.13E-02	Y	---	1.23E-02	8.00E+02	---	**2E-05**	1.17E-03	1.10E-05		**1E-08**
BENZENE	71-43-2	1.24E+00	Y	---	2.48E-01	3.00E+01	---	**8E-03**	2.36E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	---	1.04E-01	1.00E+00	---	**1E-01**	9.92E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	---	1.34E-01	NA	---	---	1.28E-02	3.70E-05		**5E-07**
BROMOMETHANE	74-83-9	3.88E+00	N	---	7.76E-01	5.00E+00	---	**2E-01**	7.40E-02	-		---
CARBON TETRACHLORIDE	56-23-5	5.94E-01	Y	---	1.19E-01	1.00E+02	---	**1E-03**	1.13E-02	6.00E-06		**7E-08**
CHLOROFORM	67-66-3	4.87E-02	N	---	9.73E-03	9.77E+01	---	**1E-04**	9.28E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	6.63E-01	Y	---	1.33E-01	1.00E+03	---	**1E-04**	1.26E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	---	6.73E-01	NA	---	---	6.42E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.54E+01	N	---	3.07E+00	2.00E+02	---	**2E-02**	2.93E-01	-		---
M,P-XYLENE	108-38-3	1.63E+00	Y	---	3.26E-01	1.00E+02	---	**3E-03**	3.11E-02	-		---
METHYLENE CHLORIDE	75-09-2	3.47E+00	N	---	6.94E-01	6.00E+02	---	**1E-03**	6.62E-02	1.00E-08	M	**7E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	---	3.30E-01	3.00E+00	---	**1E-01**	3.15E-02	3.40E-05		**1E-06**
O-XYLENE	95-47-6	6.16E-01	Y	---	1.23E-01	1.00E+02	---	**1E-03**	1.17E-02	-		---
TETRACHLOROETHENE	127-18-4	1.26E+01	Y	---	2.52E+00	4.00E+01	---	**6E-02**	2.40E-01	2.60E-07		**6E-08**
TRICHLOROETHENE	79-01-6	5.79E-01	Y	---	1.16E-01	2.00E+00	---	**6E-02**	1.10E-02	4.10E-06	M	**5E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	---	7.04E-03	2.00E+02	---	**4E-05**	6.71E-04	-		---
VINYL CHLORIDE	75-01-4	2.56E-02	N	---	5.11E-03	8.00E+01	---	**6E-05**	4.87E-04	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0263H**	**Total Inhalation**	---	**3E+00**	**2E-05**
		Based on NDs only	**0E+00**	**3E+00**	**2E-05**
		Based on Detects only	**#VALUE!**	**1E-01**	**5E-07**
		Site-related only	**0E+00**	**1E-01**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0263H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.47E+00	NA	NA	NA	6.62E-02	1.0E-08		---	---	---	7E-10	**7E-10**
TRICHLOROETHENE	79-01-6	5.79E-01	NA	NA	NA	1.10E-02	1.0E-06	kidney	---	---	---	1E-08	**1E-08**
TRICHLOROETHENE	79-01-6	5.79E-01	NA		1.10E-02		3.1E-06	NHL+liver	---		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	NA	NA	NA	4.87E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0273H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.15E-02	N	---	2.30E-03	NA	---	---	2.19E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	5.50E-02	N	---	1.10E-02	2.00E+00	---	**6E-03**	1.05E-03	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	7.50E-02	N	---	1.50E-02	3.00E+01	---	**5E-04**	1.43E-03	5.00E-06		**7E-09**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	---	1.50E-03	2.00E-01	---	**8E-03**	1.43E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	---	1.00E-01	2.00E+00	---	**5E-02**	9.54E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.90E-01	Y	---	1.18E-01	6.00E+01	---	**2E-03**	1.13E-02	-		---
1,2-DIBROMOETHANE	106-93-4	3.55E-02	N	---	7.10E-03	9.00E+00	---	**8E-04**	6.77E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	1.60E-01	Y	---	3.20E-02	7.00E+00	---	**5E-03**	3.05E-03	2.60E-05		**8E-08**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	---	2.00E-02	4.00E+00	---	**5E-03**	1.91E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	2.10E-01	Y	---	4.20E-02	6.00E+01	---	**7E-04**	4.01E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	---	1.10E-02	8.00E+02	---	**1E-05**	1.05E-03	1.10E-05		**1E-08**
BENZENE	71-43-2	4.50E-01	Y	---	9.00E-02	3.00E+01	---	**3E-03**	8.58E-03	7.80E-06		**7E-08**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	---	1.80E-02	1.00E+00	---	**2E-02**	1.72E-03	4.90E-05		**8E-08**
BROMODICHLOROMETHANE	75-27-4	1.35E-01	N	---	2.70E-02	NA	---	---	2.57E-03	3.70E-05		**1E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	---	1.40E-01	5.00E+00	---	**3E-02**	1.34E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	---	8.00E-02	1.00E+02	---	**8E-04**	7.63E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	5.30E-01	Y	---	1.06E-01	9.77E+01	---	**1E-03**	1.01E-02	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.50E-01	Y	---	3.00E-02	1.00E+03	---	**3E-05**	2.86E-03	2.50E-06		**7E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	---	1.40E-01	NA	---	---	1.34E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	2.30E+01	Y	---	4.60E+00	2.00E+02	---	**2E-02**	4.39E-01	-		---
M,P-XYLENE	108-38-3	5.10E-01	Y	---	1.02E-01	1.00E+02	---	**1E-03**	9.73E-03	-		---
METHYLENE CHLORIDE	75-09-2	2.30E-01	N	---	4.60E-02	6.00E+02	---	**8E-05**	4.39E-03	1.00E-08	M	**4E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.70E-01	Y	---	3.40E-02	1.00E+02	---	**3E-04**	3.24E-03	-		---
TETRACHLOROETHENE	127-18-4	2.70E+00	Y	---	5.40E-01	4.00E+01	---	**1E-02**	5.15E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	1.75E-02	N	---	3.50E-03	2.00E+00	---	**2E-03**	3.34E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.50E-03	N	---	1.70E-03	8.00E+01	---	**2E-05**	1.62E-04	4.40E-06	M	**7E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0273H**	**Total Inhalation**	---	**2E-01**	**1E-06**
		Based on NDs only	**0E+00**	**1E-01**	**1E-06**
		Based on Detects only	**#VALUE!**	**5E-02**	**4E-07**
		Site-related only	**0E+00**	**2E-02**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0273H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.30E-01	NA	NA	NA	4.39E-03	1.0E-08		---	---	---	4E-11	**4E-11**
TRICHLOROETHENE	79-01-6	1.75E-02	NA	NA	NA	3.34E-04	1.0E-06	kidney	---	---	---	3E-10	**3E-10**
TRICHLOROETHENE	79-01-6	1.75E-02	NA		3.34E-04		3.1E-06	NHL+liver	---		1E-09		**1E-09**
VINYL CHLORIDE	75-01-4	8.50E-03	NA	NA	NA	1.62E-04	4.4E-06		---	---	---	7E-10	**7E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0274H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-02	N	---	4.80E-03	NA	---	---	4.58E-04	5.80E-05		**3E-08**
1,3-BUTADIENE	106-99-0	4.90E-02	N	---	9.80E-03	2.00E+00	---	**5E-03**	9.35E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	8.00E-02	N	---	1.60E-02	3.00E+01	---	**5E-04**	1.53E-03	5.00E-06		**8E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	---	2.40E-03	2.00E-01	---	**1E-02**	2.29E-04	1.60E-05		**4E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.95E-01	N	---	9.90E-02	2.00E+00	---	**5E-02**	9.44E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E-01	Y	---	3.20E-02	6.00E+01	---	**5E-04**	3.05E-03	-		---
1,2-DIBROMOETHANE	106-93-4	4.30E-02	N	---	8.60E-03	9.00E+00	---	**1E-03**	8.20E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	---	2.80E-02	7.00E+00	---	**4E-03**	2.67E-03	2.60E-05		**7E-08**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	1.90E-02	4.00E+00	---	**5E-03**	1.81E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	8.00E-02	N	---	1.60E-02	6.00E+01	---	**3E-04**	1.53E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.55E-02	N	---	9.10E-03	8.00E+02	---	**1E-05**	8.68E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	3.60E-01	Y	---	7.20E-02	3.00E+01	---	**2E-03**	6.87E-03	7.80E-06		**5E-08**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	---	2.10E-02	1.00E+00	---	**2E-02**	2.00E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	---	2.20E-02	NA	---	---	2.10E-03	3.70E-05		**8E-08**
BROMOMETHANE	74-83-9	6.00E-01	N	---	1.20E-01	5.00E+00	---	**2E-02**	1.14E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	---	8.20E-02	1.00E+02	---	**8E-04**	7.82E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	5.10E-01	Y	---	1.02E-01	9.77E+01	---	**1E-03**	9.73E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.60E+00	Y	---	3.20E-01	1.00E+03	---	**3E-04**	3.05E-02	2.50E-06		**8E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.10E-01	N	---	8.20E-02	NA	---	---	7.82E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	4.40E+01	Y	---	8.80E+00	2.00E+02	---	**4E-02**	8.39E-01	-		---
M,P-XYLENE	108-38-3	6.20E+00	Y	---	1.24E+00	1.00E+02	---	**1E-02**	1.18E-01	-		---
METHYLENE CHLORIDE	75-09-2	6.20E-01	Y	---	1.24E-01	6.00E+02	---	**2E-04**	1.18E-02	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.40E+00	Y	---	2.80E-01	1.00E+02	---	**3E-03**	2.67E-02	-		---
TETRACHLOROETHENE	127-18-4	1.20E+01	Y	---	2.40E+00	4.00E+01	---	**6E-02**	2.29E-01	2.60E-07		**6E-08**
TRICHLOROETHENE	79-01-6	3.50E-02	Y	---	7.00E-03	2.00E+00	---	**4E-03**	6.68E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	3.80E-03	N	---	7.60E-04	8.00E+01	---	**1E-05**	7.25E-05	4.40E-06	M	**3E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0274H**	**Total Inhalation**	---	**2E-01**	**1E-06**
		Based on NDs only	**0E+00**	**1E-01**	**9E-07**
		Based on Detects only	**#VALUE!**	**1E-01**	**5E-07**
		Site-related only	**0E+00**	**6E-02**	**7E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0274H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.20E-01	NA	NA	NA	1.18E-02	1.0E-08		---	---	---	1E-10	**1E-10**
TRICHLOROETHENE	79-01-6	3.50E-02	NA	NA	NA	6.68E-04	1.0E-06	kidney	---	---	---	7E-10	**7E-10**
TRICHLOROETHENE	79-01-6	3.50E-02	NA		6.68E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	3.80E-03	NA	NA	NA	7.25E-05	4.4E-06		---	---	---	3E-10	**3E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0277H**

Pathway:
Inhalation of Indoor Air

			CTE child	CTE adult			CTE lifetime			
		TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.15E-02	N	---	2.30E-03	NA	---	---	2.19E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	5.00E-02	N	---	1.00E-02	2.00E+00	---	**5E-03**	9.54E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	7.50E-02	N	---	1.50E-02	3.00E+01	---	**5E-04**	1.43E-03	5.00E-06		**7E-09**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	---	1.50E-03	2.00E-01	---	**8E-03**	1.43E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	---	1.00E-01	2.00E+00	---	**5E-02**	9.54E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E-01	Y	---	2.40E-02	6.00E+01	---	**4E-04**	2.29E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.50E-02	N	---	7.00E-03	9.00E+00	---	**8E-04**	6.68E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	2.60E-01	Y	---	5.20E-02	7.00E+00	---	**7E-03**	4.96E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	---	2.00E-02	4.00E+00	---	**5E-03**	1.91E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	6.50E-02	N	---	1.30E-02	6.00E+01	---	**2E-04**	1.24E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	---	1.10E-02	8.00E+02	---	**1E-05**	1.05E-03	1.10E-05		**1E-08**
BENZENE	71-43-2	4.00E-01	Y	---	8.00E-02	3.00E+01	---	**3E-03**	7.63E-03	7.80E-06		**6E-08**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	---	1.80E-02	1.00E+00	---	**2E-02**	1.72E-03	4.90E-05		**8E-08**
BROMODICHLOROMETHANE	75-27-4	1.35E-01	N	---	2.70E-02	NA	---	---	2.57E-03	3.70E-05		**1E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	---	1.40E-01	5.00E+00	---	**3E-02**	1.34E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	---	8.00E-02	1.00E+02	---	**8E-04**	7.63E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	4.90E-01	Y	---	9.80E-02	9.77E+01	---	**1E-03**	9.35E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.40E-01	Y	---	4.80E-02	1.00E+03	---	**5E-05**	4.58E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	---	1.40E-01	NA	---	---	1.34E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	8.00E+00	Y	---	1.60E+00	2.00E+02	---	**8E-03**	1.53E-01	-		---
M,P-XYLENE	108-38-3	9.00E-01	Y	---	1.80E-01	1.00E+02	---	**2E-03**	1.72E-02	-		---
METHYLENE CHLORIDE	75-09-2	3.40E+00	Y	---	6.80E-01	6.00E+02	---	**1E-03**	6.48E-02	1.00E-08	M	**6E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.60E-01	Y	---	5.20E-02	1.00E+02	---	**5E-04**	4.96E-03	-		---
TETRACHLOROETHENE	127-18-4	5.00E+00	Y	---	1.00E+00	4.00E+01	---	**3E-02**	9.54E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	1.75E-02	N	---	3.50E-03	2.00E+00	---	**2E-03**	3.34E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.50E-03	N	---	1.70E-03	8.00E+01	---	**2E-05**	1.62E-04	4.40E-06	M	**7E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0277H**	**Total Inhalation**	---	**2E-01**	**1E-06**
		Based on NDs only	**0E+00**	**1E-01**	**9E-07**
		Based on Detects only	**#VALUE!**	**5E-02**	**5E-07**
		Site-related only	**0E+00**	**3E-02**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0277H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.40E+00	NA	NA	NA	6.48E-02	1.0E-08		---	---	---	6E-10	**6E-10**
TRICHLOROETHENE	79-01-6	1.75E-02	NA	NA	NA	3.34E-04	1.0E-06	kidney	---	---	---	3E-10	**3E-10**
TRICHLOROETHENE	79-01-6	1.75E-02	NA		3.34E-04		3.1E-06	NHL+liver	---		1E-09		**1E-09**
VINYL CHLORIDE	75-01-4	8.50E-03	NA	NA	NA	1.62E-04	4.4E-06		---	---	---	7E-10	**7E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0302H**

Pathway:
Inhalation of Indoor Air

			CTE child	CTE adult			CTE lifetime		
		TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-04		

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00E-02	N	---	2.00E-03	NA	---	---	1.91E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	4.65E-02	N	---	9.30E-03	2.00E+00	---	**5E-03**	8.87E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	7.00E-02	N	---	1.40E-02	3.00E+01	---	**5E-04**	1.34E-03	5.00E-06		**7E-09**
1,1,2-TRICHLOROETHANE	79-00-5	6.50E-03	N	---	1.30E-03	2.00E-01	---	**7E-03**	1.24E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.55E-01	N	---	9.10E-02	2.00E+00	---	**5E-02**	8.68E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E-01	Y	---	3.20E-02	6.00E+01	---	**5E-04**	3.05E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.10E-02	N	---	6.20E-03	9.00E+00	---	**7E-04**	5.91E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	9.80E-02	Y	---	1.96E-02	7.00E+00	---	**3E-03**	1.87E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	8.50E-02	N	---	1.70E-02	4.00E+00	---	**4E-03**	1.62E-03	3.70E-06		**6E-09**
1,3,5-Trimethylbenzene	108-67-8	5.50E-02	N	---	1.10E-02	6.00E+01	---	**2E-04**	1.05E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.90E-02	N	---	9.80E-03	8.00E+02	---	**1E-05**	9.35E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	4.80E-01	Y	---	9.60E-02	3.00E+01	---	**3E-03**	9.15E-03	7.80E-06		**7E-08**
BENZYL CHLORIDE	100-44-7	8.00E-02	N	---	1.60E-02	1.00E+00	---	**2E-02**	1.53E-03	4.90E-05		**7E-08**
BROMODICHLOROMETHANE	75-27-4	1.20E-01	N	---	2.40E-02	NA	---	---	2.29E-03	3.70E-05		**8E-08**
BROMOMETHANE	74-83-9	6.00E-01	N	---	1.20E-01	5.00E+00	---	**2E-02**	1.14E-02	-		---
CARBON TETRACHLORIDE	56-23-5	3.90E-01	Y	---	7.80E-02	1.00E+02	---	**8E-04**	7.44E-03	6.00E-06		**4E-08**
CHLOROFORM	67-66-3	3.70E-01	Y	---	7.40E-02	9.77E+01	---	**8E-04**	7.06E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.30E-01	Y	---	2.60E-02	1.00E+03	---	**3E-05**	2.48E-03	2.50E-06		**6E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.00E-01	N	---	1.20E-01	NA	---	---	1.14E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	1.50E+01	Y	---	3.00E+00	2.00E+02	---	**2E-02**	2.86E-01	-		---
M,P-XYLENE	108-38-3	5.40E-01	Y	---	1.08E-01	1.00E+02	---	**1E-03**	1.03E-02	-		---
METHYLENE CHLORIDE	75-09-2	2.50E-01	N	---	5.00E-02	6.00E+02	---	**8E-05**	4.77E-03	1.00E-08	M	**5E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.70E-01	Y	---	5.40E-02	1.00E+02	---	**5E-04**	5.15E-03	-		---
TETRACHLOROETHENE	127-18-4	3.40E-01	Y	---	6.80E-02	4.00E+01	---	**2E-03**	6.48E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	1.55E-02	N	---	3.10E-03	2.00E+00	---	**2E-03**	2.96E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	7.50E-03	N	---	1.50E-03	8.00E+01	---	**2E-05**	1.43E-04	4.40E-06	M	**6E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0302H**	**Total Inhalation**	---	**1E-01**	**1E-06**
		Based on NDs only	**0E+00**	**1E-01**	**8E-07**
		Based on Detects only	**#VALUE!**	**3E-02**	**3E-07**
		Site-related only	**0E+00**	**4E-03**	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0302H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.50E-01	NA	NA	NA	4.77E-03	1.0E-08		---	---	---	5E-11	**5E-11**
TRICHLOROETHENE	79-01-6	1.55E-02	NA	NA	NA	2.96E-04	1.0E-06	kidney	---	---	---	3E-10	**3E-10**
TRICHLOROETHENE	79-01-6	1.55E-02	NA		2.96E-04		3.1E-06	NHL+liver	---		9E-10		**9E-10**
VINYL CHLORIDE	75-01-4	7.50E-03	NA	NA	NA	1.43E-04	4.4E-06		---	---	---	6E-10	**6E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0315H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	---	2.20E-03	NA	---	---	2.10E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	5.00E-02	N	---	1.00E-02	2.00E+00	---	**5E-03**	9.54E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	7.50E-02	N	---	1.50E-02	3.00E+01	---	**5E-04**	1.43E-03	5.00E-06		**7E-09**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	---	1.40E-03	2.00E-01	---	**7E-03**	1.34E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	---	1.00E-01	2.00E+00	---	**5E-02**	9.54E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.50E-02	N	---	1.10E-02	6.00E+01	---	**2E-04**	1.05E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.45E-02	N	---	6.90E-03	9.00E+00	---	**8E-04**	6.58E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	1.30E-01	Y	---	2.60E-02	7.00E+00	---	**4E-03**	2.48E-03	2.60E-05		**6E-08**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	1.90E-02	4.00E+00	---	**5E-03**	1.81E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	---	1.20E-02	6.00E+01	---	**2E-04**	1.14E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	---	1.10E-02	8.00E+02	---	**1E-05**	1.05E-03	1.10E-05		**1E-08**
BENZENE	71-43-2	4.30E-01	Y	---	8.60E-02	3.00E+01	---	**3E-03**	8.20E-03	7.80E-06		**6E-08**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	---	1.80E-02	1.00E+00	---	**2E-02**	1.72E-03	4.90E-05		**8E-08**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	---	2.60E-02	NA	---	---	2.48E-03	3.70E-05		**9E-08**
BROMOMETHANE	74-83-9	7.00E-01	N	---	1.40E-01	5.00E+00	---	**3E-02**	1.34E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	---	8.00E-02	1.00E+02	---	**8E-04**	7.63E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	3.90E-01	Y	---	7.80E-02	9.77E+01	---	**8E-04**	7.44E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.40E-01	Y	---	2.80E-02	1.00E+03	---	**3E-05**	2.67E-03	2.50E-06		**7E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	---	1.40E-01	NA	---	---	1.34E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	1.70E+01	Y	---	3.40E+00	2.00E+02	---	**2E-02**	3.24E-01	-		---
M,P-XYLENE	108-38-3	4.40E-01	Y	---	8.80E-02	1.00E+02	---	**9E-04**	8.39E-03	-		---
METHYLENE CHLORIDE	75-09-2	2.60E-01	N	---	5.20E-02	6.00E+02	---	**9E-05**	4.96E-03	1.00E-08	M	**5E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.40E-01	Y	---	2.80E-02	1.00E+02	---	**3E-04**	2.67E-03	-		---
TETRACHLOROETHENE	127-18-4	2.30E+00	Y	---	4.60E-01	4.00E+01	---	**1E-02**	4.39E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	---	5.80E-02	2.00E+00	---	**3E-02**	5.53E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.50E-03	N	---	1.70E-03	8.00E+01	---	**2E-05**	1.62E-04	4.40E-06	M	**7E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0315H**	**Total Inhalation**	---	**2E-01**	**1E-06**
		Based on NDs only	**0E+00**	**1E-01**	**9E-07**
		Based on Detects only	**#VALUE!**	**7E-02**	**4E-07**
		Site-related only	**0E+00**	**4E-02**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0315H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.60E-01	NA	NA	NA	4.96E-03	1.0E-08		---	---	---	5E-11	**5E-11**
TRICHLOROETHENE	79-01-6	2.90E-01	NA	NA	NA	5.53E-03	1.0E-06	kidney	---	---	---	6E-09	**6E-09**
TRICHLOROETHENE	79-01-6	2.90E-01	NA		5.53E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	8.50E-03	NA	NA	NA	1.62E-04	4.4E-06		---	---	---	7E-10	**7E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0329H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-02	N	---	4.80E-03	NA	---	---	4.58E-04	5.80E-05		**3E-08**
1,3-BUTADIENE	106-99-0	4.90E-02	N	---	9.80E-03	2.00E+00	---	**5E-03**	9.35E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	8.00E-02	N	---	1.60E-02	3.00E+01	---	**5E-04**	1.53E-03	5.00E-06		**8E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	---	2.40E-03	2.00E-01	---	**1E-02**	2.29E-04	1.60E-05		**4E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.95E-01	N	---	9.90E-02	2.00E+00	---	**5E-02**	9.44E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.40E-01	Y	---	6.80E-02	6.00E+01	---	**1E-03**	6.48E-03	-		---
1,2-DIBROMOETHANE	106-93-4	4.30E-02	N	---	8.60E-03	9.00E+00	---	**1E-03**	8.20E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	7.20E-02	Y	---	1.44E-02	7.00E+00	---	**2E-03**	1.37E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	1.90E-02	4.00E+00	---	**5E-03**	1.81E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	8.00E-02	N	---	1.60E-02	6.00E+01	---	**3E-04**	1.53E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.55E-02	N	---	9.10E-03	8.00E+02	---	**1E-05**	8.68E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	3.80E-01	Y	---	7.60E-02	3.00E+01	---	**3E-03**	7.25E-03	7.80E-06		**6E-08**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	---	2.10E-02	1.00E+00	---	**2E-02**	2.00E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	---	2.20E-02	NA	---	---	2.10E-03	3.70E-05		**8E-08**
BROMOMETHANE	74-83-9	6.00E-01	N	---	1.20E-01	5.00E+00	---	**2E-02**	1.14E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	---	8.40E-02	1.00E+02	---	**8E-04**	8.01E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	7.60E-02	Y	---	1.52E-02	9.77E+01	---	**2E-04**	1.45E-03	2.30E-05		**3E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.60E-01	Y	---	5.20E-02	1.00E+03	---	**5E-05**	4.96E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.10E-01	N	---	8.20E-02	NA	---	---	7.82E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	1.10E+01	Y	---	2.20E+00	2.00E+02	---	**1E-02**	2.10E-01	-		---
M,P-XYLENE	108-38-3	1.10E+00	Y	---	2.20E-01	1.00E+02	---	**2E-03**	2.10E-02	-		---
METHYLENE CHLORIDE	75-09-2	4.90E-01	Y	---	9.80E-02	6.00E+02	---	**2E-04**	9.35E-03	1.00E-08	M	**9E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	4.10E-01	Y	---	8.20E-02	1.00E+02	---	**8E-04**	7.82E-03	-		---
TETRACHLOROETHENE	127-18-4	9.20E-02	Y	---	1.84E-02	4.00E+01	---	**5E-04**	1.75E-03	2.60E-07		**5E-10**
TRICHLOROETHENE	79-01-6	8.00E-03	N	---	1.60E-03	2.00E+00	---	**8E-04**	1.53E-04	4.10E-06	M	**6E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	3.80E-03	N	---	7.60E-04	8.00E+01	---	**1E-05**	7.25E-05	4.40E-06	M	**3E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0329H**	**Total Inhalation**	---	**1E-01**	**1E-06**
		Based on NDs only	**0E+00**	**1E-01**	**9E-07**
		Based on Detects only	**#VALUE!**	**2E-02**	**2E-07**
		Site-related only	**0E+00**	**2E-03**	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0329H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.90E-01	NA	NA	NA	9.35E-03	1.0E-08		---	---	---	9E-11	**9E-11**
TRICHLOROETHENE	79-01-6	8.00E-03	NA	NA	NA	1.53E-04	1.0E-06	kidney	---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	8.00E-03	NA		1.53E-04		3.1E-06	NHL+liver	---		5E-10		**5E-10**
VINYL CHLORIDE	75-01-4	3.80E-03	NA	NA	NA	7.25E-05	4.4E-06		---	---	---	3E-10	**3E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0334H**

Pathway:
Inhalation of Indoor Air

			CTE child	CTE adult			CTE lifetime			
		TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	---	1.37E-02	NA	---	---	1.31E-03	5.80E-05		**8E-08**
1,3-BUTADIENE	106-99-0	2.22E+00	N	---	4.43E-01	2.00E+00	---	**2E-01**	4.22E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	---	7.21E-02	3.00E+01	---	**2E-03**	6.88E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	---	1.63E-02	2.00E-01	---	**8E-02**	1.55E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	---	4.66E-01	2.00E+00	---	**2E-01**	4.44E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	---	9.82E-02	6.00E+01	---	**2E-03**	9.36E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	---	1.54E-02	9.00E+00	---	**2E-03**	1.47E-03	6.00E-04		**9E-07**
1,2-DICHLOROETHANE	107-06-2	9.92E-02	Y	---	1.98E-02	7.00E+00	---	**3E-03**	1.89E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	---	1.39E-02	4.00E+00	---	**3E-03**	1.33E-03	3.70E-06		**5E-09**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	---	9.82E-02	6.00E+01	---	**2E-03**	9.36E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.42E-02	Y	---	1.68E-02	8.00E+02	---	**2E-05**	1.61E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	5.78E-01	Y	---	1.16E-01	3.00E+01	---	**4E-03**	1.10E-02	7.80E-06		**9E-08**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	---	1.04E-01	1.00E+00	---	**1E-01**	9.92E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	---	1.34E-01	NA	---	---	1.28E-02	3.70E-05		**5E-07**
BROMOMETHANE	74-83-9	3.88E-01	N	---	7.76E-02	5.00E+00	---	**2E-02**	7.40E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.40E-01	Y	---	1.08E-01	1.00E+02	---	**1E-03**	1.03E-02	6.00E-06		**6E-08**
CHLOROFORM	67-66-3	1.67E+00	Y	---	3.34E-01	9.77E+01	---	**3E-03**	3.18E-02	2.30E-05		**7E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.71E-01	Y	---	5.42E-02	1.00E+03	---	**5E-05**	5.17E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	---	6.73E-01	NA	---	---	6.42E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	7.94E+00	Y	---	1.59E+00	2.00E+02	---	**8E-03**	1.51E-01	-		**---**
M,P-XYLENE	108-38-3	8.45E-01	Y	---	1.69E-01	1.00E+02	---	**2E-03**	1.61E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	6.49E-01	Y	---	1.30E-01	6.00E+02	---	**2E-04**	1.24E-02	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	---	3.30E-01	3.00E+00	---	**1E-01**	3.15E-02	3.40E-05		**1E-06**
O-XYLENE	95-47-6	4.34E-01	N	---	8.67E-02	1.00E+02	---	**9E-04**	8.27E-03	-		**---**
TETRACHLOROETHENE	127-18-4	9.64E-02	Y	---	1.93E-02	4.00E+01	---	**5E-04**	1.84E-03	2.60E-07		**5E-10**
TRICHLOROETHENE	79-01-6	5.35E-02	N	---	1.07E-02	2.00E+00	---	**5E-03**	1.02E-03	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	3.52E-02	N	---	7.04E-03	2.00E+02	---	**4E-05**	6.71E-04	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	---	5.11E-03	8.00E+01	---	**6E-05**	4.87E-04	4.40E-06	M	**2E-09**

			HI$_{child}$	**HI$_{adult}$**	**Risk$_{lifetime}$**
Indoor Worker	**0334H**	**Total Inhalation**	**---**	**8E-01**	**7E-06**
		Based on NDs only	**0E+00**	**8E-01**	**6E-06**
		Based on Detects only	**#VALUE!**	**2E-02**	**1E-06**
		Site-related only	**0E+00**	**8E-03**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0334H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.49E-01	NA	NA	NA	1.24E-02	1.0E-08		---	---	---	1E-10	**1E-10**
TRICHLOROETHENE	79-01-6	5.35E-02	NA	NA	NA	1.02E-03	1.0E-06	kidney	---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	5.35E-02	NA		1.02E-03		3.1E-06	NHL+liver	---		3E-09		**3E-09**
VINYL CHLORIDE	75-01-4	2.56E-02	NA	NA	NA	4.87E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0336H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-02	N	---	4.80E-03	NA	---	---	4.58E-04	5.80E-05		**3E-08**
1,3-BUTADIENE	106-99-0	4.90E-02	N	---	9.80E-03	2.00E+00	---	**5E-03**	9.35E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	8.00E-02	N	---	1.60E-02	3.00E+01	---	**5E-04**	1.53E-03	5.00E-06		**8E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.15E-02	N	---	2.30E-03	2.00E-01	---	**1E-02**	2.19E-04	1.60E-05		**4E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.90E-01	N	---	9.80E-02	2.00E+00	---	**5E-02**	9.35E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.20E-01	Y	---	4.40E-02	6.00E+01	---	**7E-04**	4.20E-03	-		---
1,2-DIBROMOETHANE	106-93-4	4.25E-02	N	---	8.50E-03	9.00E+00	---	**9E-04**	8.11E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	---	1.54E-02	7.00E+00	---	**2E-03**	1.47E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	1.90E-02	4.00E+00	---	**5E-03**	1.81E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	8.00E-02	N	---	1.60E-02	6.00E+01	---	**3E-04**	1.53E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.50E-02	N	---	9.00E-03	8.00E+02	---	**1E-05**	8.58E-04	1.10E-05		**9E-09**
BENZENE	71-43-2	5.50E-01	Y	---	1.10E-01	3.00E+01	---	**4E-03**	1.05E-02	7.80E-06		**8E-08**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	---	2.10E-02	1.00E+00	---	**2E-02**	2.00E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	---	2.20E-02	NA	---	---	2.10E-03	3.70E-05		**8E-08**
BROMOMETHANE	74-83-9	5.50E-01	N	---	1.10E-01	5.00E+00	---	**2E-02**	1.05E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	---	8.40E-02	1.00E+02	---	**8E-04**	8.01E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	3.10E-01	Y	---	6.20E-02	9.77E+01	---	**6E-04**	5.91E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.10E-01	Y	---	4.20E-02	1.00E+03	---	**4E-05**	4.01E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.05E-01	N	---	8.10E-02	NA	---	---	7.72E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	1.90E+01	Y	---	3.80E+00	2.00E+02	---	**2E-02**	3.62E-01	-		---
M,P-XYLENE	108-38-3	6.90E-01	Y	---	1.38E-01	1.00E+02	---	**1E-03**	1.32E-02	-		---
METHYLENE CHLORIDE	75-09-2	5.00E-01	Y	---	1.00E-01	6.00E+02	---	**2E-04**	9.54E-03	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.30E-01	Y	---	4.60E-02	1.00E+02	---	**5E-04**	4.39E-03	-		---
TETRACHLOROETHENE	127-18-4	1.60E+01	Y	---	3.20E+00	4.00E+01	---	**8E-02**	3.05E-01	2.60E-07		**8E-08**
TRICHLOROETHENE	79-01-6	1.80E-02	Y	---	3.60E-03	2.00E+00	---	**2E-03**	3.43E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	3.80E-03	N	---	7.60E-04	8.00E+01	---	**1E-05**	7.25E-05	4.40E-06	M	**3E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0336H**	**Total Inhalation**	---	**2E-01**	**1E-06**
		Based on NDs only	**0E+00**	**1E-01**	**9E-07**
		Based on Detects only	**#VALUE!**	**1E-01**	**4E-07**
		Site-related only	**0E+00**	**8E-02**	**9E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0336H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.00E-01	NA	NA	NA	9.54E-03	1.0E-08		---	---	---	1E-10	**1E-10**
TRICHLOROETHENE	79-01-6	1.80E-02	NA	NA	NA	3.43E-04	1.0E-06	kidney	---	---	---	3E-10	**3E-10**
TRICHLOROETHENE	79-01-6	1.80E-02	NA		3.43E-04		3.1E-06	NHL+liver	---		1E-09		**1E-09**
VINYL CHLORIDE	75-01-4	3.80E-03	NA	NA	NA	7.25E-05	4.4E-06		---	---	---	3E-10	**3E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0347H**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.55E-02	N	---	5.10E-03	NA	---	---	4.86E-04	5.80E-05		**3E-08**
1,3-BUTADIENE	106-99-0	5.00E-02	N	---	1.00E-02	2.00E+00	---	**5E-03**	9.54E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	8.50E-02	N	---	1.70E-02	3.00E+01	---	**6E-04**	1.62E-03	5.00E-06		**8E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.25E-02	N	---	2.50E-03	2.00E-01	---	**1E-02**	2.38E-04	1.60E-05		**4E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	---	1.00E-01	2.00E+00	---	**5E-02**	9.54E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.30E-01	Y	---	8.60E-02	6.00E+01	---	**1E-03**	8.20E-03	-		---
1,2-DIBROMOETHANE	106-93-4	4.55E-02	N	---	9.10E-03	9.00E+00	---	**1E-03**	8.68E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	1.20E+00	Y	---	2.40E-01	7.00E+00	---	**3E-02**	2.29E-02	2.60E-05		**6E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	---	2.00E-02	4.00E+00	---	**5E-03**	1.91E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	8.50E-02	N	---	1.70E-02	6.00E+01	---	**3E-04**	1.62E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.80E-02	N	---	9.60E-03	8.00E+02	---	**1E-05**	9.15E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	4.90E-01	Y	---	9.80E-02	3.00E+01	---	**3E-03**	9.35E-03	7.80E-06		**7E-08**
BENZYL CHLORIDE	100-44-7	1.15E-01	N	---	2.30E-02	1.00E+00	---	**2E-02**	2.19E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	1.15E-01	N	---	2.30E-02	NA	---	---	2.19E-03	3.70E-05		**8E-08**
BROMOMETHANE	74-83-9	6.00E-01	N	---	1.20E-01	5.00E+00	---	**2E-02**	1.14E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	---	8.40E-02	1.00E+02	---	**8E-04**	8.01E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	1.00E+00	Y	---	2.00E-01	9.77E+01	---	**2E-03**	1.91E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	6.30E-01	Y	---	1.26E-01	1.00E+03	---	**1E-04**	1.20E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.35E-01	N	---	8.70E-02	NA	---	---	8.30E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	1.50E+01	Y	---	3.00E+00	2.00E+02	---	**2E-02**	2.86E-01	-		---
M,P-XYLENE	108-38-3	2.00E+00	Y	---	4.00E-01	1.00E+02	---	**4E-03**	3.81E-02	-		---
METHYLENE CHLORIDE	75-09-2	5.00E-01	Y	---	1.00E-01	6.00E+02	---	**2E-04**	9.54E-03	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	6.40E-01	Y	---	1.28E-01	1.00E+02	---	**1E-03**	1.22E-02	-		---
TETRACHLOROETHENE	127-18-4	9.00E-02	Y	---	1.80E-02	4.00E+01	---	**5E-04**	1.72E-03	2.60E-07		**4E-10**
TRICHLOROETHENE	79-01-6	2.70E-02	Y	---	5.40E-03	2.00E+00	---	**3E-03**	5.15E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	4.05E-03	N	---	8.10E-04	8.00E+01	---	**1E-05**	7.72E-05	4.40E-06	M	**3E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0347H**	**Total Inhalation**	---	**2E-01**	**2E-06**
		Based on NDs only	**0E+00**	**1E-01**	**1E-06**
		Based on Detects only	**#VALUE!**	**7E-02**	**1E-06**
		Site-related only	**0E+00**	**4E-03**	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0347H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.00E-01	NA	NA	NA	9.54E-03	1.0E-08		---	---	---	1E-10	**1E-10**
TRICHLOROETHENE	79-01-6	2.70E-02	NA	NA	NA	5.15E-04	1.0E-06	kidney	---	---	---	5E-10	**5E-10**
TRICHLOROETHENE	79-01-6	2.70E-02	NA		5.15E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	4.05E-03	NA	NA	NA	7.72E-05	4.4E-06		---	---	---	3E-10	**3E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**365S**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.30E-02	N	---	2.60E-03	NA	---	---	2.48E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	6.00E-02	N	---	1.20E-02	2.00E+00	---	**6E-03**	1.14E-03	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	1.80E-02	3.00E+01	---	**6E-04**	1.72E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	8.50E-03	N	---	1.70E-03	2.00E-01	---	**9E-03**	1.62E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	---	1.20E-01	2.00E+00	---	**6E-02**	1.14E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.20E-01	Y	---	4.40E-02	6.00E+01	---	**7E-04**	4.20E-03	-		---
1,2-DIBROMOETHANE	106-93-4	4.05E-02	N	---	8.10E-03	9.00E+00	---	**9E-04**	7.72E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	---	2.20E-02	7.00E+00	---	**3E-03**	2.10E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	1.10E-01	N	---	2.20E-02	4.00E+00	---	**6E-03**	2.10E-03	3.70E-06		**8E-09**
1,3,5-Trimethylbenzene	108-67-8	7.00E-02	N	---	1.40E-02	6.00E+01	---	**2E-04**	1.34E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	6.50E-02	N	---	1.30E-02	8.00E+02	---	**2E-05**	1.24E-03	1.10E-05		**1E-08**
BENZENE	71-43-2	4.60E-01	Y	---	9.20E-02	3.00E+01	---	**3E-03**	8.77E-03	7.80E-06		**7E-08**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	---	2.10E-02	1.00E+00	---	**2E-02**	2.00E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	1.55E-01	N	---	3.10E-02	NA	---	---	2.96E-03	3.70E-05		**1E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.60E-01	5.00E+00	---	**3E-02**	1.53E-02	-		---
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	---	7.60E-02	1.00E+02	---	**8E-04**	7.25E-03	6.00E-06		**4E-08**
CHLOROFORM	67-66-3	1.00E-01	Y	---	2.00E-02	9.77E+01	---	**2E-04**	1.91E-03	2.30E-05		**4E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	5.30E-01	Y	---	1.06E-01	1.00E+03	---	**1E-04**	1.01E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	---	1.60E-01	NA	---	---	1.53E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	6.90E+01	Y	---	1.38E+01	2.00E+02	---	**7E-02**	1.32E+00	-		---
M,P-XYLENE	108-38-3	1.90E+00	Y	---	3.80E-01	1.00E+02	---	**4E-03**	3.62E-02	-		---
METHYLENE CHLORIDE	75-09-2	6.00E-01	Y	---	1.20E-01	6.00E+02	---	**2E-04**	1.14E-02	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	6.10E-01	Y	---	1.22E-01	1.00E+02	---	**1E-03**	1.16E-02	-		---
TETRACHLOROETHENE	127-18-4	3.10E-01	Y	---	6.20E-02	4.00E+01	---	**2E-03**	5.91E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	2.00E-02	N	---	4.00E-03	2.00E+00	---	**2E-03**	3.81E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	1.00E-02	N	---	2.00E-03	8.00E+01	---	**3E-05**	1.91E-04	4.40E-06	M	**8E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**365S**	**Total Inhalation**	---	**2E-01**	**1E-06**
		Based on NDs only	**0E+00**	**1E-01**	**1E-06**
		Based on Detects only	**#VALUE!**	**8E-02**	**2E-07**
		Site-related only	**0E+00**	**4E-03**	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**365S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.00E-01	NA	NA	NA	1.14E-02	1.0E-08		---	---	---	1E-10	**1E-10**
TRICHLOROETHENE	79-01-6	2.00E-02	NA	NA	NA	3.81E-04	1.0E-06	kidney	---	---	---	4E-10	**4E-10**
TRICHLOROETHENE	79-01-6	2.00E-02	NA		3.81E-04		3.1E-06	NHL+liver	---		1E-09		**1E-09**
VINYL CHLORIDE	75-01-4	1.00E-02	NA	NA	NA	1.91E-04	4.4E-06		---	---	---	8E-10	**8E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0366C**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	---	1.37E-02	NA	---	---	1.31E-03	5.80E-05		**8E-08**
1,3-BUTADIENE	106-99-0	2.22E+00	N	---	4.43E-01	2.00E+00	---	**2E-01**	4.22E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	---	7.21E-02	3.00E+01	---	**2E-03**	6.88E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	---	1.63E-02	2.00E-01	---	**8E-02**	1.55E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	---	4.66E-01	2.00E+00	---	**2E-01**	4.44E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.11E-01	Y	---	8.22E-02	6.00E+01	---	**1E-03**	7.84E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	---	1.54E-02	9.00E+00	---	**2E-03**	1.47E-03	6.00E-04		**9E-07**
1,2-DICHLOROETHANE	107-06-2	1.84E-01	Y	---	3.68E-02	7.00E+00	---	**5E-03**	3.51E-03	2.60E-05		**9E-08**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	---	1.39E-02	4.00E+00	---	**3E-03**	1.33E-03	3.70E-06		**5E-09**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	---	9.82E-02	6.00E+01	---	**2E-03**	9.36E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.80E-01	Y	---	3.60E-02	8.00E+02	---	**5E-05**	3.43E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	7.83E-01	Y	---	1.57E-01	3.00E+01	---	**5E-03**	1.49E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	---	1.04E-01	1.00E+00	---	**1E-01**	9.92E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	---	1.34E-01	NA	---	---	1.28E-02	3.70E-05		**5E-07**
BROMOMETHANE	74-83-9	3.88E-01	N	---	7.76E-02	5.00E+00	---	**2E-02**	7.40E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.67E-01	Y	---	1.13E-01	1.00E+02	---	**1E-03**	1.08E-02	6.00E-06		**6E-08**
CHLOROFORM	67-66-3	6.04E-01	Y	---	1.21E-01	9.77E+01	---	**1E-03**	1.15E-02	2.30E-05		**3E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	4.90E+00	Y	---	9.80E-01	1.00E+03	---	**1E-03**	9.35E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	---	6.73E-01	NA	---	---	6.42E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.27E+01	Y	---	2.54E+00	2.00E+02	---	**1E-02**	2.42E-01	-		**---**
M,P-XYLENE	108-38-3	1.22E+01	Y	---	2.44E+00	1.00E+02	---	**2E-02**	2.33E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	7.74E+00	Y	---	1.55E+00	6.00E+02	---	**3E-03**	1.48E-01	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	---	3.30E-01	3.00E+00	---	**1E-01**	3.15E-02	3.40E-05		**1E-06**
O-XYLENE	95-47-6	2.42E+00	Y	---	4.84E-01	1.00E+02	---	**5E-03**	4.62E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.07E+00	Y	---	2.14E-01	4.00E+01	---	**5E-03**	2.04E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	6.59E-02	Y	---	1.32E-02	2.00E+00	---	**7E-03**	1.26E-03	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	3.52E-02	N	---	7.04E-03	2.00E+02	---	**4E-05**	6.71E-04	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	---	5.11E-03	8.00E+01	---	**6E-05**	4.87E-04	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0366C**	**Total Inhalation**	**---**	**8E-01**	**7E-06**
		Based on NDs only	**0E+00**	**8E-01**	**6E-06**
		Based on Detects only	**#VALUE!**	**7E-02**	**8E-07**
		Site-related only	**0E+00**	**1E-02**	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0366C**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.74E+00	NA	NA	NA	1.48E-01	1.0E-08		---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	6.59E-02	NA	NA	NA	1.26E-03	1.0E-06	kidney	---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	6.59E-02	NA		1.26E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	2.56E-02	NA	NA	NA	4.87E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0381H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.15E-02	N	---	2.30E-03	NA	---	---	2.19E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	5.50E-02	N	---	1.10E-02	2.00E+00	---	**6E-03**	1.05E-03	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	4.30E-01	Y	---	8.60E-02	3.00E+01	---	**3E-03**	8.20E-03	5.00E-06		**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	---	1.50E-03	2.00E-01	---	**8E-03**	1.43E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.50E-01	N	---	1.10E-01	2.00E+00	---	**6E-02**	1.05E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.10E-01	Y	---	4.20E-02	6.00E+01	---	**7E-04**	4.01E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.65E-02	N	---	7.30E-03	9.00E+00	---	**8E-04**	6.96E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	---	2.20E-02	7.00E+00	---	**3E-03**	2.10E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	---	2.00E-02	4.00E+00	---	**5E-03**	1.91E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	6.50E-02	N	---	1.30E-02	6.00E+01	---	**2E-04**	1.24E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	---	1.10E-02	8.00E+02	---	**1E-05**	1.05E-03	1.10E-05		**1E-08**
BENZENE	71-43-2	7.60E-01	Y	---	1.52E-01	3.00E+01	---	**5E-03**	1.45E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	9.50E-02	N	---	1.90E-02	1.00E+00	---	**2E-02**	1.81E-03	4.90E-05		**9E-08**
BROMODICHLOROMETHANE	75-27-4	1.40E-01	N	---	2.80E-02	NA	---	---	2.67E-03	3.70E-05		**1E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	---	1.40E-01	5.00E+00	---	**3E-02**	1.34E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	---	8.20E-02	1.00E+02	---	**8E-04**	7.82E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	9.60E-01	Y	---	1.92E-01	9.77E+01	---	**2E-03**	1.83E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.40E+00	Y	---	4.80E-01	1.00E+03	---	**5E-04**	4.58E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	---	1.40E-01	NA	---	---	1.34E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	2.40E+01	Y	---	4.80E+00	2.00E+02	---	**2E-02**	4.58E-01	-		---
M,P-XYLENE	108-38-3	1.00E+01	Y	---	2.00E+00	1.00E+02	---	**2E-02**	1.91E-01	-		---
METHYLENE CHLORIDE	75-09-2	2.80E-01	N	---	5.60E-02	6.00E+02	---	**9E-05**	5.34E-03	1.00E-08	M	**5E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.70E+00	Y	---	5.40E-01	1.00E+02	---	**5E-03**	5.15E-02	-		---
TETRACHLOROETHENE	127-18-4	6.20E-02	Y	---	1.24E-02	4.00E+01	---	**3E-04**	1.18E-03	2.60E-07		**3E-10**
TRICHLOROETHENE	79-01-6	1.80E-02	N	---	3.60E-03	2.00E+00	---	**2E-03**	3.43E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	9.00E-03	N	---	1.80E-03	8.00E+01	---	**2E-05**	1.72E-04	4.40E-06	M	**8E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0381H**	**Total Inhalation**	---	**2E-01**	**2E-06**
		Based on NDs only	**0E+00**	**1E-01**	**1E-06**
		Based on Detects only	**#VALUE!**	**6E-02**	**8E-07**
		Site-related only	**0E+00**	**5E-03**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0381H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.80E-01	NA	NA	NA	5.34E-03	1.0E-08		---	---	---	5E-11	**5E-11**
TRICHLOROETHENE	79-01-6	1.80E-02	NA	NA	NA	3.43E-04	1.0E-06	kidney	---	---	---	3E-10	**3E-10**
TRICHLOROETHENE	79-01-6	1.80E-02	NA		3.43E-04		3.1E-06	NHL+liver	---		1E-09		**1E-09**
VINYL CHLORIDE	75-01-4	9.00E-03	NA	NA	NA	1.72E-04	4.4E-06		---	---	---	8E-10	**8E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0392H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.30E-02	N	---	4.60E-03	NA	---	---	4.39E-04	5.80E-05		**3E-08**
1,3-BUTADIENE	106-99-0	1.10E-01	N	---	2.20E-02	2.00E+00	---	**1E-02**	2.10E-03	3.00E-05		**6E-08**
1,4-DIOXANE	123-91-1	1.55E-01	N	---	3.10E-02	3.00E+01	---	**1E-03**	2.96E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.50E-02	N	---	3.00E-03	2.00E-01	---	**2E-02**	2.86E-04	1.60E-05		**5E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	1.05E+00	N	---	2.10E-01	2.00E+00	---	**1E-01**	2.00E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.60E-01	Y	---	9.20E-02	6.00E+01	---	**2E-03**	8.77E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	---	1.40E-02	9.00E+00	---	**2E-03**	1.34E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	8.40E-02	Y	---	1.68E-02	7.00E+00	---	**2E-03**	1.60E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	2.00E-01	N	---	4.00E-02	4.00E+00	---	**1E-02**	3.81E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	---	2.60E-02	6.00E+01	---	**4E-04**	2.48E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.10E-01	N	---	2.20E-02	8.00E+02	---	**3E-05**	2.10E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	6.30E-01	Y	---	1.26E-01	3.00E+01	---	**4E-03**	1.20E-02	7.80E-06		**9E-08**
BENZYL CHLORIDE	100-44-7	1.85E-01	N	---	3.70E-02	1.00E+00	---	**4E-02**	3.53E-03	4.90E-05		**2E-07**
BROMODICHLOROMETHANE	75-27-4	2.75E-01	N	---	5.50E-02	NA	---	---	5.24E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	1.45E+00	N	---	2.90E-01	5.00E+00	---	**6E-02**	2.77E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	---	7.60E-02	1.00E+02	---	**8E-04**	7.25E-03	6.00E-06		**4E-08**
CHLOROFORM	67-66-3	2.70E-01	Y	---	5.40E-02	9.77E+01	---	**6E-04**	5.15E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	3.00E-01	Y	---	6.00E-02	1.00E+03	---	**6E-05**	5.72E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.40E+00	N	---	2.80E-01	NA	---	---	2.67E-02	2.20E-05		**6E-07**
ISOPROPYL ALCOHOL	67-63-0	2.60E+01	Y	---	5.20E+00	2.00E+02	---	**3E-02**	4.96E-01	-		**---**
M,P-XYLENE	108-38-3	1.20E+00	Y	---	2.40E-01	1.00E+02	---	**2E-03**	2.29E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	3.10E-01	N	---	6.20E-02	6.00E+02	---	**1E-04**	5.91E-03	1.00E-08	M	**6E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	5.20E-01	Y	---	1.04E-01	1.00E+02	---	**1E-03**	9.92E-03	-		**---**
TETRACHLOROETHENE	127-18-4	7.40E-02	Y	---	1.48E-02	4.00E+01	---	**4E-04**	1.41E-03	2.60E-07		**4E-10**
TRICHLOROETHENE	79-01-6	3.60E-02	N	---	7.20E-03	2.00E+00	---	**4E-03**	6.87E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	1.75E-02	N	---	3.50E-03	8.00E+01	---	**4E-05**	3.34E-04	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0392H**	**Total Inhalation**	**---**	**3E-01**	**2E-06**
		Based on NDs only	**0E+00**	**2E-01**	**2E-06**
		Based on Detects only	**#VALUE!**	**4E-02**	**3E-07**
		Site-related only	**0E+00**	**5E-03**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0392H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.10E-01	NA	NA	NA	5.91E-03	1.0E-08		---	---	---	6E-11	**6E-11**
TRICHLOROETHENE	79-01-6	3.60E-02	NA	NA	NA	6.87E-04	1.0E-06	kidney	---	---	---	7E-10	**7E-10**
TRICHLOROETHENE	79-01-6	3.60E-02	NA		6.87E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	1.75E-02	NA	NA	NA	3.34E-04	4.4E-06		---	---	---	1E-09	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0395H**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	---	1.37E-02	NA	---	---	1.31E-03	5.80E-05		**8E-08**
1,3-BUTADIENE	106-99-0	2.22E+00	N	---	4.43E-01	2.00E+00	---	**2E-01**	4.22E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	---	7.21E-02	3.00E+01	---	**2E-03**	6.88E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	---	1.63E-02	2.00E-01	---	**8E-02**	1.55E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	---	4.66E-01	2.00E+00	---	**2E-01**	4.44E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	---	9.82E-02	6.00E+01	---	**2E-03**	9.36E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	---	1.54E-02	9.00E+00	---	**2E-03**	1.47E-03	6.00E-04		**9E-07**
1,2-DICHLOROETHANE	107-06-2	1.60E-01	Y	---	3.20E-02	7.00E+00	---	**5E-03**	3.05E-03	2.60E-05		**8E-08**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	---	1.39E-02	4.00E+00	---	**3E-03**	1.33E-03	3.70E-06		**5E-09**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	---	9.82E-02	6.00E+01	---	**2E-03**	9.36E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.13E-02	Y	---	1.23E-02	8.00E+02	---	**2E-05**	1.17E-03	1.10E-05		**1E-08**
BENZENE	71-43-2	5.27E-01	Y	---	1.05E-01	3.00E+01	---	**4E-03**	1.01E-02	7.80E-06		**8E-08**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	---	1.04E-01	1.00E+00	---	**1E-01**	9.92E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	---	1.34E-01	NA	---	---	1.28E-02	3.70E-05		**5E-07**
BROMOMETHANE	74-83-9	3.88E-01	N	---	7.76E-02	5.00E+00	---	**2E-02**	7.40E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	6.08E-01	Y	---	1.22E-01	1.00E+02	---	**1E-03**	1.16E-02	6.00E-06		**7E-08**
CHLOROFORM	67-66-3	5.31E-01	Y	---	1.06E-01	9.77E+01	---	**1E-03**	1.01E-02	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.43E-01	Y	---	4.86E-02	1.00E+03	---	**5E-05**	4.63E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	---	6.73E-01	NA	---	---	6.42E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	3.52E+01	Y	---	7.04E+00	2.00E+02	---	**4E-02**	6.71E-01	-		**---**
M,P-XYLENE	108-38-3	8.65E-01	N	---	1.73E-01	1.00E+02	---	**2E-03**	1.65E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	6.91E-01	Y	---	1.38E-01	6.00E+02	---	**2E-04**	1.32E-02	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	---	3.30E-01	3.00E+00	---	**1E-01**	3.15E-02	3.40E-05		**1E-06**
O-XYLENE	95-47-6	4.34E-01	N	---	8.67E-02	1.00E+02	---	**9E-04**	8.27E-03	-		**---**
TETRACHLOROETHENE	127-18-4	2.70E-01	Y	---	5.40E-02	4.00E+01	---	**1E-03**	5.15E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.17E-01	Y	---	4.34E-02	2.00E+00	---	**2E-02**	4.14E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	---	7.04E-03	2.00E+02	---	**4E-05**	6.71E-04	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	---	5.11E-03	8.00E+01	---	**6E-05**	4.87E-04	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0395H**	**Total Inhalation**	**---**	**8E-01**	**6E-06**
		Based on NDs only	**0E+00**	**8E-01**	**6E-06**
		Based on Detects only	**#VALUE!**	**7E-02**	**5E-07**
		Site-related only	**0E+00**	**3E-02**	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0395H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.91E-01	NA	NA	NA	1.32E-02	1.0E-08		---	---	---	1E-10	**1E-10**
TRICHLOROETHENE	79-01-6	2.17E-01	NA	NA	NA	4.14E-03	1.0E-06	kidney	---	---	---	4E-09	**4E-09**
TRICHLOROETHENE	79-01-6	2.17E-01	NA		4.14E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	NA	NA	NA	4.87E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**B6-IA**

Pathway:
Inhalation of Indoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)		1.91E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	8.00E-02	N	---	1.60E-02	NA	---	---	1.53E-03	5.80E-05		**9E-08**
1,3-BUTADIENE	106-99-0	2.00E-01	Y	---	4.00E-02	2.00E+00	---	**2E-02**	3.81E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	3.50E-01	Y	---	7.00E-02	3.00E+01	---	**2E-03**	6.68E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	6.00E-02	N	---	1.20E-02	2.00E-01	---	**6E-02**	1.14E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	---	1.20E-01	2.00E+00	---	**6E-02**	1.14E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.90E-01	Y	---	1.58E-01	6.00E+01	---	**3E-03**	1.51E-02	-		---
1,2-DIBROMOETHANE	106-93-4	2.80E-02	Y	---	5.60E-03	9.00E+00	---	**6E-04**	5.34E-04	6.00E-04		**3E-07**
1,2-DICHLOROETHANE	107-06-2	3.50E-01	Y	---	7.00E-02	7.00E+00	---	**1E-02**	6.68E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.30E-01	Y	---	2.60E-02	4.00E+00	---	**7E-03**	2.48E-03	3.70E-06		**9E-09**
1,3,5-Trimethylbenzene	108-67-8	2.80E-01	Y	---	5.60E-02	6.00E+01	---	**9E-04**	5.34E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	9.00E-02	N	---	1.80E-02	8.00E+02	---	**2E-05**	1.72E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	1.10E+00	Y	---	2.20E-01	3.00E+01	---	**7E-03**	2.10E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	---	1.70E-02	1.00E+00	---	**2E-02**	1.62E-03	4.90E-05		**8E-08**
BROMODICHLOROMETHANE	75-27-4	1.70E-01	Y	---	3.40E-02	NA	---	---	3.24E-03	3.70E-05		**1E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	---	1.40E-01	5.00E+00	---	**3E-02**	1.34E-02	-		---
CARBON TETRACHLORIDE	56-23-5	6.00E-01	Y	---	1.20E-01	1.00E+02	---	**1E-03**	1.14E-02	6.00E-06		**7E-08**
CHLOROFORM	67-66-3	1.40E+00	Y	---	2.80E-01	9.77E+01	---	**3E-03**	2.67E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	2.60E+02	Y	---	5.20E+01	7.00E+01	---	**7E-01**	4.96E+00	-		---
ETHYLBENZENE	100-41-4	1.50E+00	Y	---	3.00E-01	1.00E+03	---	**3E-04**	2.86E-02	2.50E-06		**7E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	---	1.70E-01	NA	---	---	1.62E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	3.90E+01	Y	---	7.80E+00	2.00E+02	---	**4E-02**	7.44E-01	-		---
M,P-XYLENE	108-38-3	8.70E+00	Y	---	1.74E+00	1.00E+02	---	**2E-02**	1.66E-01	-		---
METHYLENE CHLORIDE	75-09-2	2.90E+00	Y	---	5.80E-01	6.00E+02	---	**1E-03**	5.53E-02	1.00E-08	M	**6E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.60E+00	Y	---	5.20E-01	1.00E+02	---	**5E-03**	4.96E-02	-		---
TETRACHLOROETHENE	127-18-4	9.16E+02	Y	---	1.83E+02	4.00E+01	---	**5E+00**	1.75E+01	2.60E-07		**5E-06**
TRICHLOROETHENE	79-01-6	7.13E+00	Y	---	1.43E+00	2.00E+00	---	**7E-01**	1.36E-01	4.10E-06	M	**6E-07**
VINYL ACETATE	108-05-4	3.20E+01	Y	---	6.40E+00	2.00E+02	---	**3E-02**	6.10E-01	-		---
VINYL CHLORIDE	75-01-4	6.00E-02	N	---	1.20E-02	8.00E+01	---	**2E-04**	1.14E-03	4.40E-06	M	**5E-09**

			HI$_{child}$	**HI$_{adult}$**	**Risk$_{lifetime}$**
Indoor Worker	**B6-IA**	**Total Inhalation**	---	**6E+00**	**7E-06**
		Based on NDs only	**0E+00**	**2E-01**	**6E-07**
		Based on Detects only	**#VALUE!**	**6E+00**	**7E-06**
		Site-related only	**0E+00**	**5E+00**	**5E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**B6-IA**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.90E+00	NA	NA	NA	5.53E-02	1.0E-08		---	---	---	6E-10	**6E-10**
TRICHLOROETHENE	79-01-6	7.13E+00	NA	NA	NA	1.36E-01	1.0E-06	kidney	---	---	---	1E-07	**1E-07**
TRICHLOROETHENE	79-01-6	7.13E+00	NA		1.36E-01		3.1E-06	NHL+liver	---		4E-07		**4E-07**
VINYL CHLORIDE	75-01-4	6.00E-02	NA	NA	NA	1.14E-03	4.4E-06		---	---	---	5E-09	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**B7-IA**

Pathway:
Inhalation of Indoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	8.00E-02	N	---	1.60E-02	NA	---	---	1.53E-03	5.80E-05	**9E-08**
1,3-BUTADIENE	106-99-0	1.70E-01	Y	---	3.40E-02	2.00E+00	---	**2E-02**	3.24E-03	3.00E-05	**1E-07**
1,4-DIOXANE	123-91-1	1.20E+00	Y	---	2.40E-01	3.00E+01	---	**8E-03**	2.29E-02	5.00E-06	**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	6.00E-02	N	---	1.20E-02	2.00E-01	---	**6E-02**	1.14E-03	1.60E-05	**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	---	1.30E-01	2.00E+00	---	**7E-02**	1.24E-02	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E+00	Y	---	2.80E-01	6.00E+01	---	**5E-03**	2.67E-02	-	---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	---	1.40E-02	9.00E+00	---	**2E-03**	1.34E-03	6.00E-04	**8E-07**
1,2-DICHLOROETHANE	107-06-2	5.70E-01	Y	---	1.14E-01	7.00E+00	---	**2E-02**	1.09E-02	2.60E-05	**3E-07**
1,2-DICHLOROPROPANE	78-87-5	4.30E-01	Y	---	8.60E-02	4.00E+00	---	**2E-02**	8.20E-03	3.70E-06	**3E-08**
1,3,5-Trimethylbenzene	108-67-8	4.80E-01	Y	---	9.60E-02	6.00E+01	---	**2E-03**	9.15E-03	-	---
1,4-DICHLOROBENZENE	106-46-7	9.00E-02	N	---	1.80E-02	8.00E+02	---	**2E-05**	1.72E-03	1.10E-05	**2E-08**
BENZENE	71-43-2	2.50E+00	Y	---	5.00E-01	3.00E+01	---	**2E-02**	4.77E-02	7.80E-06	**4E-07**
BENZYL CHLORIDE	100-44-7	7.00E-02	N	---	1.40E-02	1.00E+00	---	**1E-02**	1.34E-03	4.90E-05	**7E-08**
BROMODICHLOROMETHANE	75-27-4	8.50E-02	N	---	1.70E-02	NA	---	---	1.62E-03	3.70E-05	**6E-08**
BROMOMETHANE	74-83-9	1.95E-01	N	---	3.90E-02	5.00E+00	---	**8E-03**	3.72E-03	-	---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	---	9.20E-02	1.00E+02	---	**9E-04**	8.77E-03	6.00E-06	**5E-08**
CHLOROFORM	67-66-3	2.30E-01	Y	---	4.60E-02	9.77E+01	---	**5E-04**	4.39E-03	2.30E-05	**1E-07**
ETHYL ACETATE	141-78-6	7.20E+02	Y	---	1.44E+02	7.00E+01	---	**2E+00**	1.37E+01	-	---
ETHYLBENZENE	100-41-4	1.80E+00	Y	---	3.60E-01	1.00E+03	---	**4E-04**	3.43E-02	2.50E-06	**9E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	9.00E-01	N	---	1.80E-01	NA	---	---	1.72E-02	2.20E-05	**4E-07**
ISOPROPYL ALCOHOL	67-63-0	2.20E+01	Y	---	4.40E+00	2.00E+02	---	**2E-02**	4.20E-01	-	---
M,P-XYLENE	108-38-3	5.40E+00	Y	---	1.08E+00	1.00E+02	---	**1E-02**	1.03E-01	-	---
METHYLENE CHLORIDE	75-09-2	5.20E+00	Y	---	1.04E+00	6.00E+02	---	**2E-03**	9.92E-02	1.00E-08 M	**1E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	2.40E+00	Y	---	4.80E-01	1.00E+02	---	**5E-03**	4.58E-02	-	---
TETRACHLOROETHENE	127-18-4	4.76E+00	Y	---	9.52E-01	4.00E+01	---	**2E-02**	9.08E-02	2.60E-07	**2E-08**
TRICHLOROETHENE	79-01-6	8.00E+00	Y	---	1.60E+00	2.00E+00	---	**8E-01**	1.53E-01	4.10E-06 M	**6E-07**
VINYL ACETATE	108-05-4	7.50E+00	Y	---	1.50E+00	2.00E+02	---	**8E-03**	1.43E-01	-	---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.30E-02	8.00E+01	---	**2E-04**	1.24E-03	4.40E-06 M	**5E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**B7-IA**	**Total Inhalation**	---	**3E+00**	**3E-06**
		Based on NDs only	**0E+00**	**1E-01**	**1E-06**
		Based on Detects only	**#VALUE!**	**3E+00**	**2E-06**
		Site-related only	**0E+00**	**8E-01**	**8E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**B7-IA**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.20E+00	NA	NA	NA	9.92E-02	1.0E-08		---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	8.00E+00	NA	NA	NA	1.53E-01	1.0E-06	kidney	---	---	---	2E-07	**2E-07**
TRICHLOROETHENE	79-01-6	8.00E+00	NA		1.53E-01		3.1E-06	NHL+liver	---		5E-07		**5E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	1.24E-03	4.4E-06		---	---	---	5E-09	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**B13-I**

Pathway:
Inhalation of Indoor Air

		CTE child	CTE adult			CTE lifetime	
	TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	1.91E-02	

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.40E-01	N	---	6.80E-02	4.00E+01	---	**2E-03**	6.48E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	2.70E-01	N	---	5.40E-02	2.00E+00	---	**3E-02**	5.15E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**B13-I**	**Total Inhalation**	---	**3E-02**	**2E-08**
		Based on NDs only	**0E+00**	**3E-02**	**2E-08**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**B13-I**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	2.70E-01	NA	NA	NA	5.15E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.70E-01	NA		5.15E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**B20-I**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	---	2.20E-03	NA	---	---	2.10E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	8.40E-01	Y	---	1.68E-01	2.00E+00	---	**8E-02**	1.60E-02	3.00E-05		**5E-07**
1,4-DIOXANE	123-91-1	7.50E-02	N	---	1.50E-02	3.00E+01	---	**5E-04**	1.43E-03	5.00E-06		**7E-09**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	---	1.40E-03	2.00E-01	---	**7E-03**	1.34E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	---	1.00E-01	2.00E+00	---	**5E-02**	9.54E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E-01	Y	---	2.40E-02	6.00E+01	---	**4E-04**	2.29E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.40E-02	N	---	6.80E-03	9.00E+00	---	**8E-04**	6.48E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	9.40E-02	Y	---	1.88E-02	7.00E+00	---	**3E-03**	1.79E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	1.90E-02	4.00E+00	---	**5E-03**	1.81E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	---	1.20E-02	6.00E+01	---	**2E-04**	1.14E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	3.10E-01	Y	---	6.20E-02	8.00E+02	---	**8E-05**	5.91E-03	1.10E-05		**7E-08**
BENZENE	71-43-2	5.20E-01	Y	---	1.04E-01	3.00E+01	---	**3E-03**	9.92E-03	7.80E-06		**8E-08**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	---	1.80E-02	1.00E+00	---	**2E-02**	1.72E-03	4.90E-05		**8E-08**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	---	2.60E-02	NA	---	---	2.48E-03	3.70E-05		**9E-08**
BROMOMETHANE	74-83-9	7.00E-01	N	---	1.40E-01	5.00E+00	---	**3E-02**	1.34E-02	-		---
CARBON TETRACHLORIDE	56-23-5	3.90E-01	Y	---	7.80E-02	1.00E+02	---	**8E-04**	7.44E-03	6.00E-06		**4E-08**
CHLOROFORM	67-66-3	3.30E-01	Y	---	6.60E-02	9.77E+01	---	**7E-04**	6.29E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.40E-01	Y	---	2.80E-02	1.00E+03	---	**3E-05**	2.67E-03	2.50E-06		**7E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	---	1.30E-01	NA	---	---	1.24E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	1.30E+01	Y	---	2.60E+00	2.00E+02	---	**1E-02**	2.48E-01	-		---
M,P-XYLENE	108-38-3	4.00E-01	Y	---	8.00E-02	1.00E+02	---	**8E-04**	7.63E-03	-		---
METHYLENE CHLORIDE	75-09-2	2.95E-01	N	---	5.90E-02	6.00E+02	---	**1E-04**	5.63E-03	1.00E-08	M	**6E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.40E-01	Y	---	2.80E-02	1.00E+02	---	**3E-04**	2.67E-03	-		---
TETRACHLOROETHENE	127-18-4	1.40E-01	Y	---	2.80E-02	4.00E+01	---	**7E-04**	2.67E-03	2.60E-07		**7E-10**
TRICHLOROETHENE	79-01-6	2.70E-01	N	---	5.40E-02	2.00E+00	---	**3E-02**	5.15E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.50E-03	N	---	1.70E-03	8.00E+01	---	**2E-05**	1.62E-04	4.40E-06	M	**7E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**B20-I**	**Total Inhalation**	---	**2E-01**	**2E-06**
		Based on NDs only	**0E+00**	**1E-01**	**9E-07**
		Based on Detects only	**#VALUE!**	**1E-01**	**9E-07**
		Site-related only	**0E+00**	**3E-02**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**B20-I**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.95E-01	NA	NA	NA	5.63E-03	1.0E-08		---	---	---	6E-11	**6E-11**
TRICHLOROETHENE	79-01-6	2.70E-01	NA	NA	NA	5.15E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.70E-01	NA		5.15E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	8.50E-03	NA	NA	NA	1.62E-04	4.4E-06		---	---	---	7E-10	**7E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**B32**

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	#N/A	2.00E-01	TWFc (unitless)	1.91E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.20E-02	N	---	2.40E-03	NA	---	---	2.29E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	5.50E-02	N	---	1.10E-02	2.00E+00	---	**6E-03**	1.05E-03	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	8.00E-02	N	---	1.60E-02	3.00E+01	---	**5E-04**	1.53E-03	5.00E-06		**8E-09**
1,1,2-TRICHLOROETHANE	79-00-5	8.00E-03	N	---	1.60E-03	2.00E-01	---	**8E-03**	1.53E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.50E-01	N	---	1.10E-01	2.00E+00	---	**6E-02**	1.05E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E-01	Y	---	2.80E-02	6.00E+01	---	**5E-04**	2.67E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.80E-02	N	---	7.60E-03	9.00E+00	---	**8E-04**	7.25E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	3.30E-01	Y	---	6.60E-02	7.00E+00	---	**9E-03**	6.29E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	---	2.10E-02	4.00E+00	---	**5E-03**	2.00E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	7.00E-02	N	---	1.40E-02	6.00E+01	---	**2E-04**	1.34E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	---	1.20E-02	8.00E+02	---	**2E-05**	1.14E-03	1.10E-05		**1E-08**
BENZENE	71-43-2	4.00E-01	Y	---	8.00E-02	3.00E+01	---	**3E-03**	7.63E-03	7.80E-06		**6E-08**
BENZYL CHLORIDE	100-44-7	1.00E-01	N	---	2.00E-02	1.00E+00	---	**2E-02**	1.91E-03	4.90E-05		**9E-08**
BROMODICHLOROMETHANE	75-27-4	1.45E-01	N	---	2.90E-02	NA	---	---	2.77E-03	3.70E-05		**1E-07**
BROMOMETHANE	74-83-9	7.50E-01	N	---	1.50E-01	5.00E+00	---	**3E-02**	1.43E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	---	8.00E-02	1.00E+02	---	**8E-04**	7.63E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	4.80E-01	Y	---	9.60E-02	9.77E+01	---	**1E-03**	9.15E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.20E-01	Y	---	2.40E-02	1.00E+03	---	**2E-05**	2.29E-03	2.50E-06		**6E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	---	1.50E-01	NA	---	---	1.43E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	5.30E+01	Y	---	1.06E+01	2.00E+02	---	**5E-02**	1.01E+00	-		---
M,P-XYLENE	108-38-3	3.90E-01	Y	---	7.80E-02	1.00E+02	---	**8E-04**	7.44E-03	-		---
METHYLENE CHLORIDE	75-09-2	3.60E-01	N	---	7.20E-02	6.00E+02	---	**1E-04**	6.87E-03	1.00E-08	M	**7E-11**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.60E-01	Y	---	3.20E-02	1.00E+02	---	**3E-04**	3.05E-03	-		---
TETRACHLOROETHENE	127-18-4	4.80E-02	Y	---	9.60E-03	4.00E+01	---	**2E-04**	9.15E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	1.90E-02	N	---	3.80E-03	2.00E+00	---	**2E-03**	3.62E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	9.50E-03	N	---	1.90E-03	8.00E+01	---	**2E-05**	1.81E-04	4.40E-06	M	**8E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**B32**	**Total Inhalation**	---	**2E-01**	**2E-06**
		Based on NDs only	**0E+00**	**1E-01**	**1E-06**
		Based on Detects only	**#VALUE!**	**7E-02**	**5E-07**
		Site-related only	**0E+00**	**3E-03**	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**B32**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	1.91E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.60E-01	NA	NA	NA	6.87E-03	1.0E-08		---	---	---	7E-11	**7E-11**
TRICHLOROETHENE	79-01-6	1.90E-02	NA	NA	NA	3.62E-04	1.0E-06	kidney	---	---	---	4E-10	**4E-10**
TRICHLOROETHENE	79-01-6	1.90E-02	NA		3.62E-04		3.1E-06	NHL+liver	---		1E-09		**1E-09**
VINYL CHLORIDE	75-01-4	9.50E-03	NA	NA	NA	1.81E-04	4.4E-06		---	---	---	8E-10	**8E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0001H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	6.19E-02	---	NA	---	---	5.30E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.99E-02	---	2.00E+00	**1E-02**	---	1.71E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	1.08E-02	---	3.00E+01	**4E-04**	---	9.28E-04	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	---	4.23E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.87E-01	---	2.00E+00	**9E-02**	---	1.61E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	9.02E-02	---	6.00E+01	**2E-03**	---	7.73E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	---	6.18E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	1.30E+00	Y	1.56E-01	---	7.00E+00	**2E-02**	---	1.34E-02	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	9.02E-02	---	6.00E+01	**2E-03**	---	7.73E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	1.08E-01	---	8.00E+02	**1E-04**	---	9.29E-03	1.10E-05		**1E-07**
BENZENE	71-43-2	6.50E-01	Y	7.82E-02	---	3.00E+01	**3E-03**	---	6.70E-03	7.80E-06		**5E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	1.15E-01	---	1.00E+00	**1E-01**	---	9.87E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	6.04E-02	---	NA	---	---	5.18E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	3.50E-02	---	5.00E+00	**7E-03**	---	3.00E-03	-		---
CARBON TETRACHLORIDE	56-23-5	1.10E+00	Y	1.32E-01	---	1.00E+02	**1E-03**	---	1.13E-02	6.00E-06		**7E-08**
CHLOROFORM	67-66-3	1.30E+00	Y	1.56E-01	---	9.77E+01	**2E-03**	---	1.34E-02	2.30E-05		**3E-07**
ETHYL ACETATE	141-78-6	2.10E+01	Y	2.53E+00	---	7.00E+01	**4E-02**	---	2.16E-01	-		---
ETHYLBENZENE	100-41-4	2.52E+00	Y	3.03E-01	---	1.00E+03	**3E-04**	---	2.59E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.92E-01	---	NA	---	---	1.65E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	9.55E+00	Y	1.15E+00	---	1.00E+02	**1E-02**	---	9.84E-02	-		---
METHYLENE CHLORIDE	75-09-2	1.94E+00	Y	2.34E-01	---	6.00E+02	**4E-04**	---	2.00E-02	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.43E+00	Y	2.92E-01	---	1.00E+02	**3E-03**	---	2.50E-02	-		---
TETRACHLOROETHENE	127-18-4	5.15E+00	Y	6.19E-01	---	4.00E+01	**2E-02**	---	5.31E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	3.01E-02	---	2.00E+00	**2E-02**	---	2.58E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	4.23E-02	---	2.00E+02	**2E-04**	---	3.63E-03	-		---
VINYL CHLORIDE	75-01-4	1.74E-01	Y	2.09E-02	---	8.00E+01	**3E-04**	---	1.79E-03	4.40E-06	M	**4E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0001H**	**Total Inhalation**	**6E-01**	**0E+00**	**6E-06**
		Based on NDs only	**5E-01**	**0E+00**	**5E-06**
		Based on Detects only	**9E-02**	**All ND**	**9E-07**
		Site-related only	**3E-02**	**0E+00**	**8E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0001H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.94E+00	6.68E-02	4.01E-02	NA	NA	1.0E-08		7E-10	4E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	8.59E-03	5.15E-03	NA	NA	1.0E-06	kidney	9E-09	5E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	2.58E-03		NA		3.1E-06	NHL+liver	8E-09		---		**8E-09**
VINYL CHLORIDE	75-01-4	1.74E-01	5.97E-03	3.58E-03	NA	NA	4.4E-06		3E-08	2E-08	---	---	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0002H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	6.19E-02	---	NA	---	---	5.30E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.99E-02	---	2.00E+00	**1E-02**	---	1.71E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	1.08E-02	---	3.00E+01	**4E-04**	---	9.28E-04	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	---	4.23E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.87E-01	---	2.00E+00	**9E-02**	---	1.61E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	9.02E-02	---	6.00E+01	**2E-03**	---	7.73E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	---	6.18E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	3.67E-02	---	7.00E+00	**5E-03**	---	3.14E-03	2.60E-05		**8E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	9.02E-02	---	6.00E+01	**2E-03**	---	7.73E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	1.08E-01	---	8.00E+02	**1E-04**	---	9.29E-03	1.10E-05		**1E-07**
BENZENE	71-43-2	5.50E-01	Y	6.61E-02	---	3.00E+01	**2E-03**	---	5.67E-03	7.80E-06		**4E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	1.15E-01	---	1.00E+00	**1E-01**	---	9.87E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	6.04E-02	---	NA	---	---	5.18E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	3.50E-02	---	5.00E+00	**7E-03**	---	3.00E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	5.67E-02	---	1.00E+02	**6E-04**	---	4.86E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.32E+00	Y	1.58E-01	---	9.77E+01	**2E-03**	---	1.36E-02	2.30E-05		**3E-07**
ETHYL ACETATE	141-78-6	1.84E+01	Y	2.21E+00	---	7.00E+01	**3E-02**	---	1.89E-01	-		---
ETHYLBENZENE	100-41-4	7.38E-01	Y	8.87E-02	---	1.00E+03	**9E-05**	---	7.60E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.92E-01	---	NA	---	---	1.65E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	5.40E+00	Y	6.49E-01	---	1.00E+02	**6E-03**	---	5.57E-02	-		---
METHYLENE CHLORIDE	75-09-2	8.68E+00	Y	1.04E+00	---	6.00E+02	**2E-03**	---	8.95E-02	1.00E-08	M	**5E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	9.70E-01	Y	1.17E-01	---	1.00E+02	**1E-03**	---	1.00E-02	-		---
TETRACHLOROETHENE	127-18-4	1.42E+00	Y	1.71E-01	---	4.00E+01	**4E-03**	---	1.47E-02	2.60E-07		**4E-09**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	3.49E-02	---	2.00E+00	**2E-02**	---	2.99E-03	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	4.23E-02	---	2.00E+02	**2E-04**	---	3.63E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	7.82E-03	---	8.00E+01	**1E-04**	---	6.70E-04	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0002H**	**Total Inhalation**	**6E-01**	**0E+00**	**6E-06**
		Based on NDs only	**5E-01**	**0E+00**	**5E-06**
		Based on Detects only	**7E-02**	**All ND**	**4E-07**
		Site-related only	**2E-02**	**0E+00**	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0002H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.68E+00	2.98E-01	1.79E-01	NA	NA	1.0E-08		3E-09	2E-09	---	---	**5E-09**
TRICHLOROETHENE	79-01-6	2.90E-01	9.96E-03	5.98E-03	NA	NA	1.0E-06	kidney	1E-08	6E-09	---	---	**2E-08**
TRICHLOROETHENE	79-01-6	2.90E-01	2.99E-03		NA		3.1E-06	NHL+liver	9E-09		---		**9E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	2.23E-03	1.34E-03	NA	NA	4.4E-06		1E-08	6E-09	---	---	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0003H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	3.30E+00	Y	3.97E-01	---	NA	---	---	3.40E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	2.90E-01	Y	3.49E-02	---	2.00E+00	**2E-02**	---	2.99E-03	3.00E-05		**9E-08**
1,4-DIOXANE	123-91-1	2.95E-01	N	3.55E-02	---	3.00E+01	**1E-03**	---	3.04E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	---	4.23E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	1.34E-01	---	2.00E+00	**7E-02**	---	1.15E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.60E+01	Y	3.13E+00	---	6.00E+01	**5E-02**	---	2.68E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	---	6.18E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	2.00E-01	Y	2.40E-02	---	7.00E+00	**3E-03**	---	2.06E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	7.90E+00	Y	9.50E-01	---	6.00E+01	**2E-02**	---	8.14E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	5.42E-02	---	8.00E+02	**7E-05**	---	4.64E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	2.20E+01	Y	2.65E+00	---	3.00E+01	**9E-02**	---	2.27E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	9.62E-02	---	1.00E+00	**1E-01**	---	8.25E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	6.04E-02	---	NA	---	---	5.18E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	5.00E-01	N	6.01E-02	---	5.00E+00	**1E-02**	---	5.15E-03	-		---
CARBON TETRACHLORIDE	56-23-5	6.30E-01	Y	7.58E-02	---	1.00E+02	**8E-04**	---	6.49E-03	6.00E-06		**4E-08**
CHLOROFORM	67-66-3	4.73E+01	Y	5.69E+00	---	9.77E+01	**6E-02**	---	4.88E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	1.44E+01	Y	1.73E+00	---	7.00E+01	**2E-02**	---	1.48E-01	-		---
ETHYLBENZENE	100-41-4	1.30E+01	Y	1.57E+00	---	1.00E+03	**2E-03**	---	1.34E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.92E-01	---	NA	---	---	1.65E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	2.60E+01	Y	3.13E+00	---	2.00E+02	**2E-02**	---	2.68E-01	-		---
M,P-XYLENE	108-38-3	6.95E+01	Y	8.35E+00	---	1.00E+02	**8E-02**	---	7.16E-01	-		---
METHYLENE CHLORIDE	75-09-2	9.50E-01	Y	1.14E-01	---	6.00E+02	**2E-04**	---	9.79E-03	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	7.00E-02	Y	8.42E-03	---	3.00E+00	**3E-03**	---	7.21E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	2.20E+01	Y	2.65E+00	---	1.00E+02	**3E-02**	---	2.27E-01	-		---
TETRACHLOROETHENE	127-18-4	1.70E+01	Y	2.04E+00	---	4.00E+01	**5E-02**	---	1.75E-01	2.60E-07		**5E-08**
TRICHLOROETHENE	79-01-6	4.10E-02	Y	4.93E-03	---	2.00E+00	**2E-03**	---	4.23E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	2.65E-01	N	3.19E-02	---	2.00E+02	**2E-04**	---	2.73E-03	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	2.30E-02	---	8.00E+01	**3E-04**	---	1.97E-03	4.40E-06	M	**5E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0003H**	**Total Inhalation**	**9E-01**	**0E+00**	**2E-05**
		Based on NDs only	**4E-01**	**0E+00**	**5E-06**
		Based on Detects only	**4E-01**	**All ND**	**2E-05**
		Site-related only	**6E-02**	**0E+00**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0003H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.50E-01	3.26E-02	1.96E-02	NA	NA	1.0E-08		3E-10	2E-10	---	---	**5E-10**
TRICHLOROETHENE	79-01-6	4.10E-02	1.41E-03	8.45E-04	NA	NA	1.0E-06	kidney	1E-09	8E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	4.10E-02	4.23E-04		NA		3.1E-06	NHL+liver	1E-09		---		**1E-09**
VINYL CHLORIDE	75-01-4	1.92E-01	6.58E-03	3.95E-03	NA	NA	4.4E-06		3E-08	2E-08	---	---	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0004H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	6.19E-02	---	NA	---	---	5.30E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.99E-02	---	2.00E+00	**1E-02**	---	1.71E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	1.08E-02	---	3.00E+01	**4E-04**	---	9.28E-04	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	---	4.23E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.87E-01	---	2.00E+00	**9E-02**	---	1.61E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	9.02E-02	---	6.00E+01	**2E-03**	---	7.73E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	---	6.18E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	3.67E-02	---	7.00E+00	**5E-03**	---	3.14E-03	2.60E-05		**8E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	9.02E-02	---	6.00E+01	**2E-03**	---	7.73E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	1.08E-01	---	8.00E+02	**1E-04**	---	9.29E-03	1.10E-05		**1E-07**
BENZENE	71-43-2	6.71E-01	Y	8.06E-02	---	3.00E+01	**3E-03**	---	6.91E-03	7.80E-06		**5E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	1.15E-01	---	1.00E+00	**1E-01**	---	9.87E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	6.04E-02	---	NA	---	---	5.18E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	3.50E-02	---	5.00E+00	**7E-03**	---	3.00E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	5.67E-02	---	1.00E+02	**6E-04**	---	4.86E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	8.50E-01	Y	1.02E-01	---	9.77E+01	**1E-03**	---	8.76E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	1.60E+00	Y	1.92E-01	---	7.00E+01	**3E-03**	---	1.65E-02	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	3.91E-02	---	1.00E+03	**4E-05**	---	3.35E-03	2.50E-06		**8E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.92E-01	---	NA	---	---	1.65E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	9.99E-01	Y	1.20E-01	---	1.00E+02	**1E-03**	---	1.03E-02	-		---
METHYLENE CHLORIDE	75-09-2	2.10E+00	Y	2.53E-01	---	6.00E+02	**4E-04**	---	2.16E-02	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	3.91E-02	---	1.00E+02	**4E-04**	---	3.35E-03	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	4.21E-02	---	4.00E+01	**1E-03**	---	3.61E-03	2.60E-07		**9E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	3.01E-02	---	2.00E+00	**2E-02**	---	2.58E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	4.23E-02	---	2.00E+02	**2E-04**	---	3.63E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	7.82E-03	---	8.00E+01	**1E-04**	---	6.70E-04	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0004H**	**Total Inhalation**	**5E-01**	**0E+00**	**6E-06**
		Based on NDs only	**5E-01**	**0E+00**	**5E-06**
		Based on Detects only	**8E-03**	**All ND**	**3E-07**
		Site-related only	**2E-02**	**0E+00**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0004H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.10E+00	7.21E-02	4.33E-02	NA	NA	1.0E-08		7E-10	4E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	8.59E-03	5.15E-03	NA	NA	1.0E-06	kidney	9E-09	5E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	2.58E-03		NA		3.1E-06	NHL+liver	8E-09		---		**8E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	2.23E-03	1.34E-03	NA	NA	4.4E-06		1E-08	6E-09	---	---	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0008H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	6.19E-02	---	NA	---	---	5.30E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.99E-02	---	2.00E+00	**1E-02**	---	1.71E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	---	4.23E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	1.34E-01	---	2.00E+00	**7E-02**	---	1.15E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.70E+01	Y	3.25E+00	---	6.00E+01	**5E-02**	---	2.79E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	---	6.18E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	3.67E-02	---	7.00E+00	**5E-03**	---	3.14E-03	2.60E-05		**8E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	8.84E+00	Y	1.06E+00	---	6.00E+01	**2E-02**	---	9.11E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	5.42E-02	---	8.00E+02	**7E-05**	---	4.64E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	3.51E+01	Y	4.22E+00	---	3.00E+01	**1E-01**	---	3.62E-01	7.80E-06		**3E-06**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	9.62E-02	---	1.00E+00	**1E-01**	---	8.25E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	6.04E-02	---	NA	---	---	5.18E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	3.50E-02	---	5.00E+00	**7E-03**	---	3.00E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	5.67E-02	---	1.00E+02	**6E-04**	---	4.86E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	3.66E-01	N	4.40E-02	---	9.77E+01	**5E-04**	---	3.77E-03	2.30E-05		**9E-08**
ETHYL ACETATE	141-78-6	2.10E+00	Y	2.53E-01	---	7.00E+01	**4E-03**	---	2.16E-02	-		---
ETHYLBENZENE	100-41-4	2.73E+01	Y	3.29E+00	---	1.00E+03	**3E-03**	---	2.82E-01	2.50E-06		**7E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.92E-01	---	NA	---	---	1.65E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.22E+02	Y	1.46E+01	---	1.00E+02	**1E-01**	---	1.25E+00	-		---
METHYLENE CHLORIDE	75-09-2	8.00E-01	Y	9.62E-02	---	6.00E+02	**2E-04**	---	8.25E-03	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	4.04E+01	Y	4.85E+00	---	1.00E+02	**5E-02**	---	4.16E-01	-		---
TETRACHLOROETHENE	127-18-4	2.91E+00	Y	3.50E-01	---	4.00E+01	**9E-03**	---	3.00E-02	2.60E-07		**8E-09**
TRICHLOROETHENE	79-01-6	4.05E-01	N	4.87E-02	---	2.00E+00	**2E-02**	---	4.17E-03	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	3.19E-02	---	2.00E+02	**2E-04**	---	2.73E-03	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	2.30E-02	---	8.00E+01	**3E-04**	---	1.97E-03	4.40E-06	M	**5E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0008H**	**Total Inhalation**	**9E-01**	**0E+00**	**9E-06**
		Based on NDs only	**5E-01**	**0E+00**	**5E-06**
		Based on Detects only	**4E-01**	**All ND**	**4E-06**
		Site-related only	**3E-02**	**0E+00**	**9E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0008H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.00E-01	2.75E-02	1.65E-02	NA	NA	1.0E-08		3E-10	2E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	4.05E-01	1.39E-02	8.35E-03	NA	NA	1.0E-06	kidney	1E-08	8E-09	---	---	**2E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	4.17E-03		NA		3.1E-06	NHL+liver	1E-08		---		**1E-08**
VINYL CHLORIDE	75-01-4	1.92E-01	6.58E-03	3.95E-03	NA	NA	4.4E-06		3E-08	2E-08	---	---	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0011H**

Pathway:
Inhalation of Indoor Air

			RME child	RME adult			RME lifetime		
		TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02		

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	6.19E-02	---	NA	---	---	5.30E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	1.40E-01	Y	1.68E-02	---	2.00E+00	**8E-03**	---	1.44E-03	3.00E-05		**4E-08**
1,4-DIOXANE	123-91-1	1.70E-01	Y	2.04E-02	---	3.00E+01	**7E-04**	---	1.75E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	---	4.23E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.45E+00	N	1.74E-01	---	2.00E+00	**9E-02**	---	1.49E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.60E-01	Y	4.33E-02	---	6.00E+01	**7E-04**	---	3.71E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	---	6.18E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	1.20E-01	Y	1.44E-02	---	7.00E+00	**2E-03**	---	1.24E-03	2.60E-05		**3E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	4.45E-02	---	6.00E+01	**7E-04**	---	3.81E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	5.42E-02	---	8.00E+02	**7E-05**	---	4.64E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	8.60E-01	Y	1.03E-01	---	3.00E+01	**3E-03**	---	8.86E-03	7.80E-06		**7E-08**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	1.32E-02	---	1.00E+00	**1E-02**	---	1.13E-03	4.90E-05		**6E-08**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	6.04E-02	---	NA	---	---	5.18E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	3.70E-01	N	4.45E-02	---	5.00E+00	**9E-03**	---	3.81E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	5.53E-02	---	1.00E+02	**6E-04**	---	4.74E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	5.50E-01	Y	6.61E-02	---	9.77E+01	**7E-04**	---	5.67E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	1.62E+00	Y	1.95E-01	---	7.00E+01	**3E-03**	---	1.67E-02	-		---
ETHYLBENZENE	100-41-4	4.70E-01	Y	5.65E-02	---	1.00E+03	**6E-05**	---	4.84E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.95E+00	N	2.34E-01	---	NA	---	---	2.01E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	5.90E+00	Y	7.09E-01	---	2.00E+02	**4E-03**	---	6.08E-02	-		---
M,P-XYLENE	108-38-3	1.20E+00	Y	1.44E-01	---	1.00E+02	**1E-03**	---	1.24E-02	-		---
METHYLENE CHLORIDE	75-09-2	3.82E+00	Y	4.59E-01	---	6.00E+02	**8E-04**	---	3.94E-02	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	4.65E-02	N	5.59E-03	---	3.00E+00	**2E-03**	---	4.79E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	4.50E-01	Y	5.41E-02	---	1.00E+02	**5E-04**	---	4.64E-03	-		---
TETRACHLOROETHENE	127-18-4	1.90E+01	Y	2.28E+00	---	4.00E+01	**6E-02**	---	1.96E-01	2.60E-07		**5E-08**
TRICHLOROETHENE	79-01-6	5.80E-02	Y	6.97E-03	---	2.00E+00	**3E-03**	---	5.98E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	2.65E-01	N	3.19E-02	---	2.00E+02	**2E-04**	---	2.73E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	7.82E-03	---	8.00E+01	**1E-04**	---	6.70E-04	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0011H**	**Total Inhalation**	**5E-01**	**0E+00**	**5E-06**
		Based on NDs only	**4E-01**	**0E+00**	**5E-06**
		Based on Detects only	**9E-02**	**All ND**	**4E-07**
		Site-related only	**6E-02**	**0E+00**	**8E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0011H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.82E+00	1.31E-01	7.87E-02	NA	NA	1.0E-08		1E-09	8E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	5.80E-02	1.99E-03	1.20E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	5.80E-02	5.98E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	2.23E-03	1.34E-03	NA	NA	4.4E-06		1E-08	6E-09	---	---	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0012H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	6.19E-02	---	NA	---	---	5.30E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.99E-02	---	2.00E+00	**1E-02**	---	1.71E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	1.08E-02	---	3.00E+01	**4E-04**	---	9.28E-04	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	---	4.23E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.87E-01	---	2.00E+00	**9E-02**	---	1.61E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	9.02E-02	---	6.00E+01	**2E-03**	---	7.73E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	---	6.18E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	3.67E-02	---	7.00E+00	**5E-03**	---	3.14E-03	2.60E-05		**8E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	9.02E-02	---	6.00E+01	**2E-03**	---	7.73E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	1.08E-01	---	8.00E+02	**1E-04**	---	9.29E-03	1.10E-05		**1E-07**
BENZENE	71-43-2	6.39E-01	Y	7.68E-02	---	3.00E+01	**3E-03**	---	6.58E-03	7.80E-06		**5E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	1.15E-01	---	1.00E+00	**1E-01**	---	9.87E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	6.04E-02	---	NA	---	---	5.18E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	3.50E-02	---	5.00E+00	**7E-03**	---	3.00E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	5.67E-02	---	1.00E+02	**6E-04**	---	4.86E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.51E+00	Y	1.82E-01	---	9.77E+01	**2E-03**	---	1.56E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	6.48E+00	Y	7.79E-01	---	7.00E+01	**1E-02**	---	6.68E-02	-		---
ETHYLBENZENE	100-41-4	1.13E+00	Y	1.36E-01	---	1.00E+03	**1E-04**	---	1.16E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.92E-01	---	NA	---	---	1.65E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	3.73E+00	Y	4.49E-01	---	1.00E+02	**4E-03**	---	3.84E-02	-		---
METHYLENE CHLORIDE	75-09-2	1.11E+00	Y	1.34E-01	---	6.00E+02	**2E-04**	---	1.14E-02	1.00E-08	M	**6E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	9.98E-01	Y	1.20E-01	---	1.00E+02	**1E-03**	---	1.03E-02	-		---
TETRACHLOROETHENE	127-18-4	2.58E+00	Y	3.10E-01	---	4.00E+01	**8E-03**	---	2.66E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	3.01E-02	---	2.00E+00	**2E-02**	---	2.58E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	4.23E-02	---	2.00E+02	**2E-04**	---	3.63E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	7.82E-03	---	8.00E+01	**1E-04**	---	6.70E-04	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0012H**	**Total Inhalation**	**5E-01**	**0E+00**	**6E-06**
		Based on NDs only	**5E-01**	**0E+00**	**5E-06**
		Based on Detects only	**3E-02**	**All ND**	**4E-07**
		Site-related only	**2E-02**	**0E+00**	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0012H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.11E+00	3.82E-02	2.29E-02	NA	NA	1.0E-08		4E-10	2E-10	---	---	**6E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	8.59E-03	5.15E-03	NA	NA	1.0E-06	kidney	9E-09	5E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	2.58E-03		NA		3.1E-06	NHL+liver	8E-09		---		**8E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	2.23E-03	1.34E-03	NA	NA	4.4E-06		1E-08	6E-09	---	---	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0013H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	6.19E-02	---	NA	---	---	5.30E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.99E-02	---	2.00E+00	**1E-02**	---	1.71E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	9.50E-02	N	1.14E-02	---	3.00E+01	**4E-04**	---	9.79E-04	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	---	4.23E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.87E-01	---	2.00E+00	**9E-02**	---	1.61E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	9.02E-02	---	6.00E+01	**2E-03**	---	7.73E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	---	6.18E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	1.30E-01	Y	1.56E-02	---	7.00E+00	**2E-03**	---	1.34E-03	2.60E-05		**3E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	9.02E-02	---	6.00E+01	**2E-03**	---	7.73E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	1.08E-01	---	8.00E+02	**1E-04**	---	9.29E-03	1.10E-05		**1E-07**
BENZENE	71-43-2	6.20E-01	Y	7.46E-02	---	3.00E+01	**2E-03**	---	6.39E-03	7.80E-06		**5E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	1.15E-01	---	1.00E+00	**1E-01**	---	9.87E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	6.04E-02	---	NA	---	---	5.18E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	6.50E-01	N	7.82E-02	---	5.00E+00	**2E-02**	---	6.70E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	5.05E-02	---	1.00E+02	**5E-04**	---	4.33E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	3.50E-01	Y	4.21E-02	---	9.77E+01	**4E-04**	---	3.61E-03	2.30E-05		**8E-08**
ETHYL ACETATE	141-78-6	5.50E-01	N	6.61E-02	---	7.00E+01	**9E-04**	---	5.67E-03	-		---
ETHYLBENZENE	100-41-4	1.80E-01	Y	2.16E-02	---	1.00E+03	**2E-05**	---	1.86E-03	2.50E-06		**5E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.92E-01	---	NA	---	---	1.65E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	2.10E+01	Y	2.53E+00	---	2.00E+02	**1E-02**	---	2.16E-01	-		---
M,P-XYLENE	108-38-3	1.52E+00	Y	1.83E-01	---	1.00E+02	**2E-03**	---	1.57E-02	-		---
METHYLENE CHLORIDE	75-09-2	2.40E+00	Y	2.89E-01	---	6.00E+02	**5E-04**	---	2.47E-02	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.40E-01	Y	1.68E-02	---	1.00E+02	**2E-04**	---	1.44E-03	-		---
TETRACHLOROETHENE	127-18-4	7.00E-02	Y	8.42E-03	---	4.00E+01	**2E-04**	---	7.21E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	3.01E-02	---	2.00E+00	**2E-02**	---	2.58E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.00E+00	Y	3.61E-01	---	2.00E+02	**2E-03**	---	3.09E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	7.82E-03	---	8.00E+01	**1E-04**	---	6.70E-04	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0013H**	**Total Inhalation**	**5E-01**	**0E+00**	**6E-06**
		Based on NDs only	**5E-01**	**0E+00**	**5E-06**
		Based on Detects only	**2E-02**	**All ND**	**2E-07**
		Site-related only	**2E-02**	**0E+00**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0013H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.40E+00	8.25E-02	4.95E-02	NA	NA	1.0E-08		8E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	8.59E-03	5.15E-03	NA	NA	1.0E-06	kidney	9E-09	5E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	2.58E-03		NA		3.1E-06	NHL+liver	8E-09		---		**8E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	2.23E-03	1.34E-03	NA	NA	4.4E-06		1E-08	6E-09	---	---	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0017H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	6.19E-02	---	NA	---	---	5.30E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.99E-02	---	2.00E+00	**1E-02**	---	1.71E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	1.08E-02	---	3.00E+01	**4E-04**	---	9.28E-04	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	---	4.23E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	9.83E-01	Y	1.18E-01	---	6.00E+01	**2E-03**	---	1.01E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	---	6.18E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	3.67E-02	---	7.00E+00	**5E-03**	---	3.14E-03	2.60E-05		**8E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	4.45E-02	---	6.00E+01	**7E-04**	---	3.81E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	5.42E-02	---	8.00E+02	**7E-05**	---	4.64E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	8.00E-01	Y	9.62E-02	---	3.00E+01	**3E-03**	---	8.25E-03	7.80E-06		**6E-08**
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	6.04E-02	---	NA	---	---	5.18E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	3.50E-02	---	5.00E+00	**7E-03**	---	3.00E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	5.67E-02	---	1.00E+02	**6E-04**	---	4.86E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.61E+00	Y	1.94E-01	---	9.77E+01	**2E-03**	---	1.66E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	3.30E+00	Y	3.97E-01	---	7.00E+01	**6E-03**	---	3.40E-02	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	3.91E-02	---	1.00E+03	**4E-05**	---	3.35E-03	2.50E-06		**8E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	2.04E+00	Y	2.45E-01	---	1.00E+02	**2E-03**	---	2.10E-02	-		---
METHYLENE CHLORIDE	75-09-2	8.33E-01	Y	1.00E-01	---	6.00E+02	**2E-04**	---	8.59E-03	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	3.91E-02	---	1.00E+02	**4E-04**	---	3.35E-03	-		---
TETRACHLOROETHENE	127-18-4	1.02E+01	Y	1.22E+00	---	4.00E+01	**3E-02**	---	1.05E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	3.92E-01	Y	4.71E-02	---	2.00E+00	**2E-02**	---	4.04E-03	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	3.19E-02	---	2.00E+02	**2E-04**	---	2.73E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	7.82E-03	---	8.00E+01	**1E-04**	---	6.70E-04	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0017H**	**Total Inhalation**	**4E-01**	**0E+00**	**5E-06**
		Based on NDs only	**3E-01**	**0E+00**	**5E-06**
		Based on Detects only	**7E-02**	**All ND**	**5E-07**
		Site-related only	**5E-02**	**0E+00**	**8E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0017H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.33E-01	2.86E-02	1.72E-02	NA	NA	1.0E-08		3E-10	2E-10	---	---	**5E-10**
TRICHLOROETHENE	79-01-6	3.92E-01	1.35E-02	8.08E-03	NA	NA	1.0E-06	kidney	1E-08	8E-09	---	---	**2E-08**
TRICHLOROETHENE	79-01-6	3.92E-01	4.04E-03		NA		3.1E-06	NHL+liver	1E-08		---		**1E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	2.23E-03	1.34E-03	NA	NA	4.4E-06		1E-08	6E-09	---	---	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0018H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-01	Y	2.89E-02	---	NA	---	---	2.47E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	4.30E-01	Y	5.17E-02	---	2.00E+00	**3E-02**	---	4.43E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	4.90E-01	Y	5.89E-02	---	3.00E+01	**2E-03**	---	5.05E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	---	4.23E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.60E+00	Y	5.53E-01	---	2.00E+00	**3E-01**	---	4.74E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.80E+00	Y	3.37E-01	---	6.00E+01	**6E-03**	---	2.89E-02	-		---
1,2-DIBROMOETHANE	106-93-4	9.40E-02	Y	1.13E-02	---	9.00E+00	**1E-03**	---	9.69E-04	6.00E-04		**6E-07**
1,2-DICHLOROETHANE	107-06-2	1.30E+00	Y	1.56E-01	---	7.00E+00	**2E-02**	---	1.34E-02	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	9.00E-01	Y	1.08E-01	---	6.00E+01	**2E-03**	---	9.28E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.60E-01	Y	5.53E-02	---	8.00E+02	**7E-05**	---	4.74E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	5.60E+00	Y	6.73E-01	---	3.00E+01	**2E-02**	---	5.77E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	8.40E-01	Y	1.01E-01	---	1.00E+00	**1E-01**	---	8.66E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	4.50E-01	Y	5.41E-02	---	NA	---	---	4.64E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	8.42E-02	---	5.00E+00	**2E-02**	---	7.21E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	5.53E-02	---	1.00E+02	**6E-04**	---	4.74E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	2.40E+00	Y	2.89E-01	---	9.77E+01	**3E-03**	---	2.47E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	4.68E+00	Y	5.63E-01	---	7.00E+01	**8E-03**	---	4.83E-02	-		---
ETHYLBENZENE	100-41-4	2.40E+00	Y	2.89E-01	---	1.00E+03	**3E-04**	---	2.47E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	5.30E+00	Y	6.37E-01	---	NA	---	---	5.46E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.30E+02	Y	1.56E+01	---	2.00E+02	**8E-02**	---	1.34E+00	-		---
M,P-XYLENE	108-38-3	1.00E+01	Y	1.20E+00	---	1.00E+02	**1E-02**	---	1.03E-01	-		---
METHYLENE CHLORIDE	75-09-2	1.70E+00	Y	2.04E-01	---	6.00E+02	**3E-04**	---	1.75E-02	1.00E-08	M	**9E-10**
NAPHTHALENE	91-20-3	8.30E+00	Y	9.98E-01	---	3.00E+00	**3E-01**	---	8.55E-02	3.40E-05		**3E-06**
O-XYLENE	95-47-6	3.20E+00	Y	3.85E-01	---	1.00E+02	**4E-03**	---	3.30E-02	-		---
TETRACHLOROETHENE	127-18-4	1.40E+01	Y	1.68E+00	---	4.00E+01	**4E-02**	---	1.44E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	8.30E-01	Y	9.98E-02	---	2.00E+00	**5E-02**	---	8.55E-03	4.10E-06	M	**7E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	3.19E-02	---	2.00E+02	**2E-04**	---	2.73E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	7.82E-03	---	8.00E+01	**1E-04**	---	6.70E-04	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0018H**	**Total Inhalation**	**1E+00**	**0E+00**	**7E-06**
		Based on NDs only	**3E-01**	**0E+00**	**1E-07**
		Based on Detects only	**1E+00**	**All ND**	**7E-06**
		Site-related only	**9E-02**	**0E+00**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0018H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.70E+00	5.84E-02	3.50E-02	NA	NA	1.0E-08		6E-10	4E-10	---	---	**9E-10**
TRICHLOROETHENE	79-01-6	8.30E-01	2.85E-02	1.71E-02	NA	NA	1.0E-06	kidney	3E-08	2E-08	---	---	**5E-08**
TRICHLOROETHENE	79-01-6	8.30E-01	8.55E-03		NA		3.1E-06	NHL+liver	3E-08		---		**3E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	2.23E-03	1.34E-03	NA	NA	4.4E-06		1E-08	6E-09	---	---	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0023H**

Pathway:
Inhalation of Indoor Air

			RME child	RME adult			RME lifetime		
		TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02		

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	6.19E-02	---	NA	---	---	5.30E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.99E-02	---	2.00E+00	**1E-02**	---	1.71E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	1.08E-02	---	3.00E+01	**4E-04**	---	9.28E-04	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	---	4.23E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.70E-01	N	4.45E-02	---	6.00E+01	**7E-04**	---	3.81E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	---	6.18E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	3.67E-02	---	7.00E+00	**5E-03**	---	3.14E-03	2.60E-05		**8E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	4.45E-02	---	6.00E+01	**7E-04**	---	3.81E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	5.42E-02	---	8.00E+02	**7E-05**	---	4.64E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	1.40E+00	Y	1.68E-01	---	3.00E+01	**6E-03**	---	1.44E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	6.04E-02	---	NA	---	---	5.18E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	3.50E-02	---	5.00E+00	**7E-03**	---	3.00E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	5.67E-02	---	1.00E+02	**6E-04**	---	4.86E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	3.66E-01	N	4.40E-02	---	9.77E+01	**5E-04**	---	3.77E-03	2.30E-05		**9E-08**
ETHYL ACETATE	141-78-6	2.70E-01	N	3.25E-02	---	7.00E+01	**5E-04**	---	2.78E-03	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	3.91E-02	---	1.00E+03	**4E-05**	---	3.35E-03	2.50E-06		**8E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	2.30E+00	Y	2.77E-01	---	1.00E+02	**3E-03**	---	2.37E-02	-		---
METHYLENE CHLORIDE	75-09-2	6.40E-01	Y	7.70E-02	---	6.00E+02	**1E-04**	---	6.60E-03	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	6.94E-01	Y	8.35E-02	---	1.00E+02	**8E-04**	---	7.16E-03	-		---
TETRACHLOROETHENE	127-18-4	1.40E+00	Y	1.68E-01	---	4.00E+01	**4E-03**	---	1.44E-02	2.60E-07		**4E-09**
TRICHLOROETHENE	79-01-6	1.35E-01	N	1.62E-02	---	2.00E+00	**8E-03**	---	1.39E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	3.19E-02	---	2.00E+02	**2E-04**	---	2.73E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	7.82E-03	---	8.00E+01	**1E-04**	---	6.70E-04	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0023H**	**Total Inhalation**	**3E-01**	**0E+00**	**5E-06**
		Based on NDs only	**3E-01**	**0E+00**	**5E-06**
		Based on Detects only	**1E-02**	**All ND**	**1E-07**
		Site-related only	**1E-02**	**0E+00**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0023H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.40E-01	2.20E-02	1.32E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	1.35E-01	4.64E-03	2.78E-03	NA	NA	1.0E-06	kidney	5E-09	3E-09	---	---	**7E-09**
TRICHLOROETHENE	79-01-6	1.35E-01	1.39E-03		NA		3.1E-06	NHL+liver	4E-09		---		**4E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	2.23E-03	1.34E-03	NA	NA	4.4E-06		1E-08	6E-09	---	---	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0025H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	6.19E-02	---	NA	---	---	5.30E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.99E-02	---	2.00E+00	**1E-02**	---	1.71E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	2.34E+00	Y	2.81E-01	---	3.00E+01	**9E-03**	---	2.41E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	---	4.23E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.87E-01	---	2.00E+00	**9E-02**	---	1.61E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.60E-01	Y	3.13E-02	---	6.00E+01	**5E-04**	---	2.68E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	---	6.18E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	3.30E-01	Y	3.97E-02	---	7.00E+00	**6E-03**	---	3.40E-03	2.60E-05		**9E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	9.02E-02	---	6.00E+01	**2E-03**	---	7.73E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	2.10E+00	Y	2.53E-01	---	8.00E+02	**3E-04**	---	2.16E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	8.30E-01	Y	9.98E-02	---	3.00E+01	**3E-03**	---	8.55E-03	7.80E-06		**7E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	1.15E-01	---	1.00E+00	**1E-01**	---	9.87E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	6.04E-02	---	NA	---	---	5.18E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	9.62E-02	---	5.00E+00	**2E-02**	---	8.25E-03	-		---
CARBON TETRACHLORIDE	56-23-5	5.60E-01	Y	6.73E-02	---	1.00E+02	**7E-04**	---	5.77E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.90E+00	Y	2.28E-01	---	9.77E+01	**2E-03**	---	1.96E-02	2.30E-05		**5E-07**
ETHYL ACETATE	141-78-6	3.90E+00	Y	4.69E-01	---	7.00E+01	**7E-03**	---	4.02E-02	-		---
ETHYLBENZENE	100-41-4	2.10E-01	Y	2.53E-02	---	1.00E+03	**3E-05**	---	2.16E-03	2.50E-06		**5E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.92E-01	---	NA	---	---	1.65E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	7.70E+00	Y	9.26E-01	---	2.00E+02	**5E-03**	---	7.94E-02	-		---
M,P-XYLENE	108-38-3	1.30E+00	Y	1.56E-01	---	1.00E+02	**2E-03**	---	1.34E-02	-		---
METHYLENE CHLORIDE	75-09-2	3.33E+00	Y	4.01E-01	---	6.00E+02	**7E-04**	---	3.43E-02	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	8.80E-02	Y	1.06E-02	---	3.00E+00	**4E-03**	---	9.07E-04	3.40E-05		**3E-08**
O-XYLENE	95-47-6	3.10E-01	Y	3.73E-02	---	1.00E+02	**4E-04**	---	3.20E-03	-		---
TETRACHLOROETHENE	127-18-4	4.40E-01	Y	5.29E-02	---	4.00E+01	**1E-03**	---	4.53E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	3.01E-02	---	2.00E+00	**2E-02**	---	2.58E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	4.23E-02	---	2.00E+02	**2E-04**	---	3.63E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	7.82E-03	---	8.00E+01	**1E-04**	---	6.70E-04	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0025H**	**Total Inhalation**	**6E-01**	**0E+00**	**6E-06**
		Based on NDs only	**5E-01**	**0E+00**	**5E-06**
		Based on Detects only	**4E-02**	**All ND**	**1E-06**
		Site-related only	**3E-02**	**0E+00**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0025H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.33E+00	1.14E-01	6.87E-02	NA	NA	1.0E-08		1E-09	7E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	8.59E-03	5.15E-03	NA	NA	1.0E-06	kidney	9E-09	5E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	2.58E-03		NA		3.1E-06	NHL+liver	8E-09		---		**8E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	2.23E-03	1.34E-03	NA	NA	4.4E-06		1E-08	6E-09	---	---	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0026H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	6.19E-02	---	NA	---	---	5.30E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.99E-02	---	2.00E+00	**1E-02**	---	1.71E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	2.60E-01	Y	3.13E-02	---	3.00E+01	**1E-03**	---	2.68E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.80E-01	Y	1.06E-01	---	2.00E-01	**5E-01**	---	9.07E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.87E-01	---	2.00E+00	**9E-02**	---	1.61E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E+00	Y	1.92E-01	---	6.00E+01	**3E-03**	---	1.65E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	---	6.18E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	3.00E+00	Y	3.61E-01	---	7.00E+00	**5E-02**	---	3.09E-02	2.60E-05		**8E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	2.50E-01	Y	3.01E-02	---	6.00E+01	**5E-04**	---	2.58E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	8.40E-02	Y	1.01E-02	---	8.00E+02	**1E-05**	---	8.66E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	7.70E-01	Y	9.26E-02	---	3.00E+01	**3E-03**	---	7.94E-03	7.80E-06		**6E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	1.15E-01	---	1.00E+00	**1E-01**	---	9.87E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	6.10E-01	Y	7.33E-02	---	NA	---	---	6.29E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	9.62E-02	---	5.00E+00	**2E-02**	---	8.25E-03	-		---
CARBON TETRACHLORIDE	56-23-5	5.20E-01	Y	6.25E-02	---	1.00E+02	**6E-04**	---	5.36E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	2.60E+00	Y	3.13E-01	---	9.77E+01	**3E-03**	---	2.68E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	5.10E+00	Y	6.13E-01	---	7.00E+01	**9E-03**	---	5.26E-02	-		---
ETHYLBENZENE	100-41-4	2.30E+00	Y	2.77E-01	---	1.00E+03	**3E-04**	---	2.37E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.92E-01	---	NA	---	---	1.65E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	2.90E+01	Y	3.49E+00	---	2.00E+02	**2E-02**	---	2.99E-01	-		---
M,P-XYLENE	108-38-3	9.12E+00	Y	1.10E+00	---	1.00E+02	**1E-02**	---	9.40E-02	-		---
METHYLENE CHLORIDE	75-09-2	2.22E+00	Y	2.67E-01	---	6.00E+02	**4E-04**	---	2.29E-02	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	3.00E-02	N	3.61E-03	---	3.00E+00	**1E-03**	---	3.09E-04	3.40E-05		**1E-08**
O-XYLENE	95-47-6	2.10E+00	Y	2.53E-01	---	1.00E+02	**3E-03**	---	2.16E-02	-		---
TETRACHLOROETHENE	127-18-4	1.20E+01	Y	1.44E+00	---	4.00E+01	**4E-02**	---	1.24E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	Y	3.01E-02	---	2.00E+00	**2E-02**	---	2.58E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	4.23E-02	---	2.00E+02	**2E-04**	---	3.63E-03	-		---
VINYL CHLORIDE	75-01-4	1.60E-02	Y	1.92E-03	---	8.00E+01	**2E-05**	---	1.65E-04	4.40E-06	M	**4E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0026H**	**Total Inhalation**	**9E-01**	**0E+00**	**7E-06**
		Based on NDs only	**3E-01**	**0E+00**	**5E-06**
		Based on Detects only	**7E-01**	**All ND**	**2E-06**
		Site-related only	**5E-02**	**0E+00**	**7E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0026H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.22E+00	7.63E-02	4.58E-02	NA	NA	1.0E-08		8E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	8.59E-03	5.15E-03	NA	NA	1.0E-06	kidney	9E-09	5E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	2.58E-03		NA		3.1E-06	NHL+liver	8E-09		---		**8E-09**
VINYL CHLORIDE	75-01-4	1.60E-02	5.50E-04	3.30E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**4E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0027H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	6.19E-02	---	NA	---	---	5.30E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.99E-02	---	2.00E+00	**1E-02**	---	1.71E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	1.08E-02	---	3.00E+01	**4E-04**	---	9.28E-04	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	---	4.23E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.87E-01	---	2.00E+00	**9E-02**	---	1.61E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	9.02E-02	---	6.00E+01	**2E-03**	---	7.73E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	---	6.18E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	3.11E+00	Y	3.75E-01	---	7.00E+00	**5E-02**	---	3.21E-02	2.60E-05		**8E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	9.02E-02	---	6.00E+01	**2E-03**	---	7.73E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	3.42E+00	Y	4.12E-01	---	8.00E+02	**5E-04**	---	3.53E-02	1.10E-05		**4E-07**
BENZENE	71-43-2	7.34E-01	Y	8.83E-02	---	3.00E+01	**3E-03**	---	7.57E-03	7.80E-06		**6E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	1.15E-01	---	1.00E+00	**1E-01**	---	9.87E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	6.04E-02	---	NA	---	---	5.18E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	3.50E-02	---	5.00E+00	**7E-03**	---	3.00E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	5.67E-02	---	1.00E+02	**6E-04**	---	4.86E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	3.66E-01	N	4.40E-02	---	9.77E+01	**5E-04**	---	3.77E-03	2.30E-05		**9E-08**
ETHYL ACETATE	141-78-6	1.10E+00	Y	1.32E-01	---	7.00E+01	**2E-03**	---	1.13E-02	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	3.91E-02	---	1.00E+03	**4E-05**	---	3.35E-03	2.50E-06		**8E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.92E-01	---	NA	---	---	1.65E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.35E+00	Y	1.62E-01	---	1.00E+02	**2E-03**	---	1.39E-02	-		---
METHYLENE CHLORIDE	75-09-2	1.25E+00	Y	1.50E-01	---	6.00E+02	**3E-04**	---	1.29E-02	1.00E-08	M	**7E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	3.91E-02	---	1.00E+02	**4E-04**	---	3.35E-03	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	4.21E-02	---	4.00E+01	**1E-03**	---	3.61E-03	2.60E-07		**9E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	3.01E-02	---	2.00E+00	**2E-02**	---	2.58E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	4.23E-02	---	2.00E+02	**2E-04**	---	3.63E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	7.82E-03	---	8.00E+01	**1E-04**	---	6.70E-04	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0027H**	**Total Inhalation**	**6E-01**	**0E+00**	**7E-06**
		Based on NDs only	**5E-01**	**0E+00**	**5E-06**
		Based on Detects only	**6E-02**	**All ND**	**1E-06**
		Site-related only	**2E-02**	**0E+00**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0027H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.25E+00	4.29E-02	2.58E-02	NA	NA	1.0E-08		4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	8.59E-03	5.15E-03	NA	NA	1.0E-06	kidney	9E-09	5E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	2.58E-03		NA		3.1E-06	NHL+liver	8E-09		---		**8E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	2.23E-03	1.34E-03	NA	NA	4.4E-06		1E-08	6E-09	---	---	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0029H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	6.19E-02	---	NA	---	---	5.30E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.99E-02	---	2.00E+00	**1E-02**	---	1.71E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	2.80E-01	Y	3.37E-02	---	3.00E+01	**1E-03**	---	2.89E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	---	4.23E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.87E-01	---	2.00E+00	**9E-02**	---	1.61E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E-01	Y	1.92E-02	---	6.00E+01	**3E-04**	---	1.65E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	---	6.18E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	7.90E-02	Y	9.50E-03	---	7.00E+00	**1E-03**	---	8.14E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	9.02E-02	---	6.00E+01	**2E-03**	---	7.73E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	1.08E-01	---	8.00E+02	**1E-04**	---	9.29E-03	1.10E-05		**1E-07**
BENZENE	71-43-2	1.31E+00	Y	1.57E-01	---	3.00E+01	**5E-03**	---	1.35E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	1.15E-01	---	1.00E+00	**1E-01**	---	9.87E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	6.04E-02	---	NA	---	---	5.18E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	8.42E-02	---	5.00E+00	**2E-02**	---	7.21E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	4.81E-02	---	1.00E+02	**5E-04**	---	4.12E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	1.00E+00	Y	1.20E-01	---	9.77E+01	**1E-03**	---	1.03E-02	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	5.50E-01	N	6.61E-02	---	7.00E+01	**9E-04**	---	5.67E-03	-		**---**
ETHYLBENZENE	100-41-4	1.80E-01	Y	2.16E-02	---	1.00E+03	**2E-05**	---	1.86E-03	2.50E-06		**5E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.92E-01	---	NA	---	---	1.65E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	1.70E+01	Y	2.04E+00	---	2.00E+02	**1E-02**	---	1.75E-01	-		**---**
M,P-XYLENE	108-38-3	2.21E+00	Y	2.66E-01	---	1.00E+02	**3E-03**	---	2.28E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	1.91E+01	Y	2.30E+00	---	6.00E+02	**4E-03**	---	1.97E-01	1.00E-08	M	**1E-08**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.80E-01	Y	2.16E-02	---	1.00E+02	**2E-04**	---	1.86E-03	-		**---**
TETRACHLOROETHENE	127-18-4	6.58E+00	Y	7.91E-01	---	4.00E+01	**2E-02**	---	6.78E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	3.70E-02	Y	4.45E-03	---	2.00E+00	**2E-03**	---	3.81E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	3.52E-01	N	4.23E-02	---	2.00E+02	**2E-04**	---	3.63E-03	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	7.82E-03	---	8.00E+01	**1E-04**	---	6.70E-04	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0029H**	**Total Inhalation**	**6E-01**	**0E+00**	**6E-06**
		Based on NDs only	**5E-01**	**0E+00**	**5E-06**
		Based on Detects only	**5E-02**	**All ND**	**4E-07**
		Site-related only	**2E-02**	**0E+00**	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0029H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.91E+01	6.56E-01	3.94E-01	NA	NA	1.0E-08		7E-09	4E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	3.70E-02	1.27E-03	7.63E-04	NA	NA	1.0E-06	kidney	1E-09	8E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	3.70E-02	3.81E-04		NA		3.1E-06	NHL+liver	1E-09		---		**1E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	2.23E-03	1.34E-03	NA	NA	4.4E-06		1E-08	6E-09	---	---	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0030H**

Pathway:
Inhalation of Indoor Air

				RME child	RME adult				RME lifetime			
				TWFnc (unitless)	1.20E-01	#N/A			TWFc (unitless)	1.03E-02		
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	6.19E-02	---	NA	---	---	5.30E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.99E-02	---	2.00E+00	**1E-02**	---	1.71E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	---	4.23E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	1.34E-01	---	2.00E+00	**7E-02**	---	1.15E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.21E+00	Y	2.66E-01	---	6.00E+01	**4E-03**	---	2.28E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	---	6.18E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	9.30E-01	Y	1.12E-01	---	7.00E+00	**2E-02**	---	9.59E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	9.00E-01	Y	1.08E-01	---	6.00E+01	**2E-03**	---	9.28E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	5.42E-02	---	8.00E+02	**7E-05**	---	4.64E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	1.12E+00	Y	1.34E-01	---	3.00E+01	**4E-03**	---	1.15E-02	7.80E-06		**9E-08**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	9.62E-02	---	1.00E+00	**1E-01**	---	8.25E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	6.04E-02	---	NA	---	---	5.18E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	3.50E-02	---	5.00E+00	**7E-03**	---	3.00E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	5.67E-02	---	1.00E+02	**6E-04**	---	4.86E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	3.66E-01	N	4.40E-02	---	9.77E+01	**5E-04**	---	3.77E-03	2.30E-05		**9E-08**
ETHYL ACETATE	141-78-6	3.70E+00	Y	4.45E-01	---	7.00E+01	**6E-03**	---	3.81E-02	-		---
ETHYLBENZENE	100-41-4	1.13E+00	Y	1.36E-01	---	1.00E+03	**1E-04**	---	1.16E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.92E-01	---	NA	---	---	1.65E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	4.80E+00	Y	5.77E-01	---	1.00E+02	**6E-03**	---	4.95E-02	-		---
METHYLENE CHLORIDE	75-09-2	1.11E+00	Y	1.34E-01	---	6.00E+02	**2E-04**	---	1.14E-02	1.00E-08	M	**6E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.60E+00	Y	1.92E-01	---	1.00E+02	**2E-03**	---	1.65E-02	-		---
TETRACHLOROETHENE	127-18-4	5.90E+00	Y	7.09E-01	---	4.00E+01	**2E-02**	---	6.08E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	N	4.87E-02	---	2.00E+00	**2E-02**	---	4.17E-03	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	3.19E-02	---	2.00E+02	**2E-04**	---	2.73E-03	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	2.30E-02	---	8.00E+01	**3E-04**	---	1.97E-03	4.40E-06	M	**5E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0030H**	**Total Inhalation**	**5E-01**	**0E+00**	**6E-06**
		Based on NDs only	**5E-01**	**0E+00**	**5E-06**
		Based on Detects only	**6E-02**	**All ND**	**4E-07**
		Site-related only	**4E-02**	**0E+00**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0030H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.11E+00	3.82E-02	2.29E-02	NA	NA	1.0E-08		4E-10	2E-10	---	---	**6E-10**
TRICHLOROETHENE	79-01-6	4.05E-01	1.39E-02	8.35E-03	NA	NA	1.0E-06	kidney	1E-08	8E-09	---	---	**2E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	4.17E-03		NA		3.1E-06	NHL+liver	1E-08		---		**1E-08**
VINYL CHLORIDE	75-01-4	1.92E-01	6.58E-03	3.95E-03	NA	NA	4.4E-06		3E-08	2E-08	---	---	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0036H**

Pathway:
Inhalation of Indoor Air

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	6.19E-02	---	NA	**---**	**---**	5.30E-03	5.80E-05	**3E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.99E-02	---	2.00E+00	**1E-02**	**---**	1.71E-03	3.00E-05	**5E-08**
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	**---**	**---**	---	5.00E-06	**---**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	**---**	4.23E-03	1.60E-05	**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	1.34E-01	---	2.00E+00	**7E-02**	**---**	1.15E-02	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	3.70E-01	N	4.45E-02	---	6.00E+01	**7E-04**	**---**	3.81E-03	-	**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	**---**	6.18E-03	6.00E-04	**4E-06**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	3.67E-02	---	7.00E+00	**5E-03**	**---**	3.14E-03	2.60E-05	**8E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	**---**	3.76E-03	3.70E-06	**1E-08**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	4.45E-02	---	6.00E+01	**7E-04**	**---**	3.81E-03	-	**---**
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	5.42E-02	---	8.00E+02	**7E-05**	**---**	4.64E-03	1.10E-05	**5E-08**
BENZENE	71-43-2	1.15E+00	Y	1.38E-01	---	3.00E+01	**5E-03**	**---**	1.18E-02	7.80E-06	**9E-08**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	9.62E-02	---	1.00E+00	**1E-01**	**---**	8.25E-03	4.90E-05	**4E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	6.04E-02	---	NA	**---**	**---**	5.18E-03	3.70E-05	**2E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	3.50E-02	---	5.00E+00	**7E-03**	**---**	3.00E-03	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	5.67E-02	---	1.00E+02	**6E-04**	**---**	4.86E-03	6.00E-06	**3E-08**
CHLOROFORM	67-66-3	1.10E+00	Y	1.32E-01	---	9.77E+01	**1E-03**	**---**	1.13E-02	2.30E-05	**3E-07**
ETHYL ACETATE	141-78-6	6.12E+00	Y	7.36E-01	---	7.00E+01	**1E-02**	**---**	6.31E-02	-	**---**
ETHYLBENZENE	100-41-4	3.25E-01	N	3.91E-02	---	1.00E+03	**4E-05**	**---**	3.35E-03	2.50E-06	**8E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.92E-01	---	NA	**---**	**---**	1.65E-02	2.20E-05	**4E-07**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	8.30E-01	Y	9.98E-02	---	1.00E+02	**1E-03**	**---**	8.55E-03	-	**---**
METHYLENE CHLORIDE	75-09-2	1.10E+00	Y	1.32E-01	---	6.00E+02	**2E-04**	**---**	1.13E-02	1.00E-08	M **6E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	3.25E-01	N	3.91E-02	---	1.00E+02	**4E-04**	**---**	3.35E-03	-	**---**
TETRACHLOROETHENE	127-18-4	3.60E+00	Y	4.33E-01	---	4.00E+01	**1E-02**	**---**	3.71E-02	2.60E-07	**1E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	N	4.87E-02	---	2.00E+00	**2E-02**	**---**	4.17E-03	4.10E-06	M **4E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	3.19E-02	---	2.00E+02	**2E-04**	**---**	2.73E-03	-	**---**
VINYL CHLORIDE	75-01-4	1.92E-01	N	2.30E-02	---	8.00E+01	**3E-04**	**---**	1.97E-03	4.40E-06	M **5E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0036H**	**Total Inhalation**	**5E-01**	**0E+00**	**6E-06**
		Based on NDs only	**5E-01**	**0E+00**	**5E-06**
		Based on Detects only	**3E-02**	**All ND**	**4E-07**
		Site-related only	**4E-02**	**0E+00**	**9E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0036H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.10E+00	3.78E-02	2.27E-02	NA	NA	1.0E-08		4E-10	2E-10	---	---	**6E-10**
TRICHLOROETHENE	79-01-6	4.05E-01	1.39E-02	8.35E-03	NA	NA	1.0E-06	kidney	1E-08	8E-09	---	---	**2E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	4.17E-03		NA		3.1E-06	NHL+liver	1E-08		---		**1E-08**
VINYL CHLORIDE	75-01-4	1.92E-01	6.58E-03	3.95E-03	NA	NA	4.4E-06		3E-08	2E-08	---	---	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0037H**

Pathway:
Inhalation of Indoor Air

			RME child	RME adult			RME lifetime		
		TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02		

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-01	Y	1.32E-02	---	NA	---	---	1.13E-03	5.80E-05		**7E-08**
1,3-BUTADIENE	106-99-0	3.00E-01	Y	3.61E-02	---	2.00E+00	**2E-02**	---	3.09E-03	3.00E-05		**9E-08**
1,4-DIOXANE	123-91-1	1.70E+00	Y	2.04E-01	---	3.00E+01	**7E-03**	---	1.75E-02	5.00E-06		**9E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	---	4.23E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.60E+00	N	1.92E-01	---	2.00E+00	**1E-01**	---	1.65E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.40E+00	Y	6.49E-01	---	6.00E+01	**1E-02**	---	5.57E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	---	6.18E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	7.00E+00	Y	8.42E-01	---	7.00E+00	**1E-01**	---	7.21E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	1.20E+00	Y	1.44E-01	---	6.00E+01	**2E-03**	---	1.24E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	5.42E-02	---	8.00E+02	**7E-05**	---	4.64E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	3.70E+00	Y	4.45E-01	---	3.00E+01	**1E-02**	---	3.81E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	1.20E-01	N	1.44E-02	---	1.00E+00	**1E-02**	---	1.24E-03	4.90E-05		**6E-08**
BROMODICHLOROMETHANE	75-27-4	5.70E-01	Y	6.85E-02	---	NA	---	---	5.87E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	4.00E-01	N	4.81E-02	---	5.00E+00	**1E-02**	---	4.12E-03	-		---
CARBON TETRACHLORIDE	56-23-5	5.50E-01	Y	6.61E-02	---	1.00E+02	**7E-04**	---	5.67E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	3.20E+00	Y	3.85E-01	---	9.77E+01	**4E-03**	---	3.30E-02	2.30E-05		**8E-07**
ETHYL ACETATE	141-78-6	2.40E+00	Y	2.89E-01	---	7.00E+01	**4E-03**	---	2.47E-02	-		---
ETHYLBENZENE	100-41-4	3.80E+00	Y	4.57E-01	---	1.00E+03	**5E-04**	---	3.92E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	2.15E+00	N	2.59E-01	---	NA	---	---	2.22E-02	2.20E-05		**5E-07**
ISOPROPYL ALCOHOL	67-63-0	7.50E+01	Y	9.02E+00	---	2.00E+02	**5E-02**	---	7.73E-01	-		---
M,P-XYLENE	108-38-3	1.60E+01	Y	1.92E+00	---	1.00E+02	**2E-02**	---	1.65E-01	-		---
METHYLENE CHLORIDE	75-09-2	8.20E-01	Y	9.86E-02	---	6.00E+02	**2E-04**	---	8.45E-03	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	7.20E-02	Y	8.66E-03	---	3.00E+00	**3E-03**	---	7.42E-04	3.40E-05		**3E-08**
O-XYLENE	95-47-6	5.60E+00	Y	6.73E-01	---	1.00E+02	**7E-03**	---	5.77E-02	-		---
TETRACHLOROETHENE	127-18-4	8.70E+00	Y	1.05E+00	---	4.00E+01	**3E-02**	---	8.97E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	1.00E-01	Y	1.20E-02	---	2.00E+00	**6E-03**	---	1.03E-03	4.10E-06	M	**9E-09**
VINYL ACETATE	108-05-4	2.65E-01	N	3.19E-02	---	2.00E+02	**2E-04**	---	2.73E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	7.82E-03	---	8.00E+01	**1E-04**	---	6.70E-04	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0037H**	**Total Inhalation**	**7E-01**	**0E+00**	**8E-06**
		Based on NDs only	**4E-01**	**0E+00**	**4E-06**
		Based on Detects only	**3E-01**	**All ND**	**4E-06**
		Site-related only	**4E-02**	**0E+00**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0037H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.20E-01	2.82E-02	1.69E-02	NA	NA	1.0E-08		3E-10	2E-10	---	---	**5E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	3.44E-03	2.06E-03	NA	NA	1.0E-06	kidney	3E-09	2E-09	---	---	**5E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	1.03E-03		NA		3.1E-06	NHL+liver	3E-09		---		**3E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	2.23E-03	1.34E-03	NA	NA	4.4E-06		1E-08	6E-09	---	---	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0038H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	6.19E-02	---	NA	---	---	5.30E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.99E-02	---	2.00E+00	**1E-02**	---	1.71E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	1.08E-02	---	3.00E+01	**4E-04**	---	9.28E-04	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	---	4.23E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.87E-01	---	2.00E+00	**9E-02**	---	1.61E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	9.02E-02	---	6.00E+01	**2E-03**	---	7.73E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	---	6.18E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	3.67E-02	---	7.00E+00	**5E-03**	---	3.14E-03	2.60E-05		**8E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	9.02E-02	---	6.00E+01	**2E-03**	---	7.73E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	1.08E-01	---	8.00E+02	**1E-04**	---	9.29E-03	1.10E-05		**1E-07**
BENZENE	71-43-2	5.11E-01	Y	6.14E-02	---	3.00E+01	**2E-03**	---	5.27E-03	7.80E-06		**4E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	1.15E-01	---	1.00E+00	**1E-01**	---	9.87E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	6.04E-02	---	NA	---	---	5.18E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	3.50E-02	---	5.00E+00	**7E-03**	---	3.00E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	5.67E-02	---	1.00E+02	**6E-04**	---	4.86E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.42E+00	Y	1.70E-01	---	9.77E+01	**2E-03**	---	1.46E-02	2.30E-05		**3E-07**
ETHYL ACETATE	141-78-6	5.50E-01	N	6.61E-02	---	7.00E+01	**9E-04**	---	5.67E-03	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	3.91E-02	---	1.00E+03	**4E-05**	---	3.35E-03	2.50E-06		**8E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.92E-01	---	NA	---	---	1.65E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.30E+00	Y	1.56E-01	---	1.00E+02	**2E-03**	---	1.34E-02	-		---
METHYLENE CHLORIDE	75-09-2	3.12E+00	Y	3.76E-01	---	6.00E+02	**6E-04**	---	3.22E-02	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	3.91E-02	---	1.00E+02	**4E-04**	---	3.35E-03	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	4.21E-02	---	4.00E+01	**1E-03**	---	3.61E-03	2.60E-07		**9E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	3.01E-02	---	2.00E+00	**2E-02**	---	2.58E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	4.23E-02	---	2.00E+02	**2E-04**	---	3.63E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	7.82E-03	---	8.00E+01	**1E-04**	---	6.70E-04	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0038H**	**Total Inhalation**	**5E-01**	**0E+00**	**6E-06**
		Based on NDs only	**5E-01**	**0E+00**	**5E-06**
		Based on Detects only	**6E-03**	**All ND**	**4E-07**
		Site-related only	**2E-02**	**0E+00**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0038H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.12E+00	1.07E-01	6.44E-02	NA	NA	1.0E-08		1E-09	6E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	8.59E-03	5.15E-03	NA	NA	1.0E-06	kidney	9E-09	5E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	2.58E-03		NA		3.1E-06	NHL+liver	8E-09		---		**8E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	2.23E-03	1.34E-03	NA	NA	4.4E-06		1E-08	6E-09	---	---	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0040H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	6.19E-02	---	NA	---	---	5.30E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	1.44E+00	Y	1.73E-01	---	2.00E+00	**9E-02**	---	1.48E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	1.08E-02	---	3.00E+01	**4E-04**	---	9.28E-04	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	---	4.23E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.10E+00	Y	4.93E-01	---	6.00E+01	**8E-03**	---	4.23E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	---	6.18E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	3.67E-02	---	7.00E+00	**5E-03**	---	3.14E-03	2.60E-05		**8E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	1.10E+00	Y	1.32E-01	---	6.00E+01	**2E-03**	---	1.13E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	5.42E-02	---	8.00E+02	**7E-05**	---	4.64E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	2.60E+00	Y	3.13E-01	---	3.00E+01	**1E-02**	---	2.68E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	6.04E-02	---	NA	---	---	5.18E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	2.91E-01	N	3.50E-02	---	5.00E+00	**7E-03**	---	3.00E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	5.67E-02	---	1.00E+02	**6E-04**	---	4.86E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	4.80E+00	Y	5.77E-01	---	9.77E+01	**6E-03**	---	4.95E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	1.30E+00	Y	1.56E-01	---	7.00E+01	**2E-03**	---	1.34E-02	-		---
ETHYLBENZENE	100-41-4	2.20E+00	Y	2.65E-01	---	1.00E+03	**3E-04**	---	2.27E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	7.90E+00	Y	9.50E-01	---	1.00E+02	**9E-03**	---	8.14E-02	-		---
METHYLENE CHLORIDE	75-09-2	2.60E+02	Y	3.13E+01	---	6.00E+02	**5E-02**	---	2.68E+00	1.00E-08	M	**1E-07**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.34E+00	Y	2.82E-01	---	1.00E+02	**3E-03**	---	2.42E-02	-		---
TETRACHLOROETHENE	127-18-4	1.53E+02	Y	1.84E+01	---	4.00E+01	**5E-01**	---	1.58E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	1.26E+01	Y	1.52E+00	---	2.00E+00	**8E-01**	---	1.30E-01	4.10E-06	M	**1E-06**
VINYL ACETATE	108-05-4	2.65E-01	N	3.19E-02	---	2.00E+02	**2E-04**	---	2.73E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	7.82E-03	---	8.00E+01	**1E-04**	---	6.70E-04	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0040H**	**Total Inhalation**	**2E+00**	**0E+00**	**8E-06**
		Based on NDs only	**3E-01**	**0E+00**	**4E-06**
		Based on Detects only	**1E+00**	**All ND**	**3E-06**
		Site-related only	**1E+00**	**0E+00**	**2E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0040H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.60E+02	8.93E+00	5.36E+00	NA	NA	1.0E-08		9E-08	5E-08	---	---	**1E-07**
TRICHLOROETHENE	79-01-6	1.26E+01	4.33E-01	2.60E-01	NA	NA	1.0E-06	kidney	4E-07	3E-07	---	---	**7E-07**
TRICHLOROETHENE	79-01-6	1.26E+01	1.30E-01		NA		3.1E-06	NHL+liver	4E-07		---		**4E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	2.23E-03	1.34E-03	NA	NA	4.4E-06		1E-08	6E-09	---	---	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0041H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	1.26E-03	---	NA	---	---	1.08E-04	5.80E-05		**6E-09**
1,3-BUTADIENE	106-99-0	4.90E-02	N	5.89E-03	---	2.00E+00	**3E-03**	---	5.05E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	7.00E-02	N	8.42E-03	---	3.00E+01	**3E-04**	---	7.21E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	8.42E-04	---	2.00E-01	**4E-03**	---	7.21E-05	1.60E-05		**1E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.80E-01	N	5.77E-02	---	2.00E+00	**3E-02**	---	4.95E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E-01	Y	1.68E-02	---	6.00E+01	**3E-04**	---	1.44E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	3.97E-03	---	9.00E+00	**4E-04**	---	3.40E-04	6.00E-04		**2E-07**
1,2-DICHLOROETHANE	107-06-2	5.10E-01	Y	6.13E-02	---	7.00E+00	**9E-03**	---	5.26E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	1.08E-02	---	4.00E+00	**3E-03**	---	9.28E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	7.21E-03	---	6.00E+01	**1E-04**	---	6.18E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	6.01E-03	---	8.00E+02	**8E-06**	---	5.15E-04	1.10E-05		**6E-09**
BENZENE	71-43-2	4.80E-01	Y	5.77E-02	---	3.00E+01	**2E-03**	---	4.95E-03	7.80E-06		**4E-08**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	1.02E-02	---	1.00E+00	**1E-02**	---	8.76E-04	4.90E-05		**4E-08**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	1.50E-02	---	NA	---	---	1.29E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	6.50E-01	N	7.82E-02	---	5.00E+00	**2E-02**	---	6.70E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	5.17E-02	---	1.00E+02	**5E-04**	---	4.43E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	9.00E-01	Y	1.08E-01	---	9.77E+01	**1E-03**	---	9.28E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.40E-01	Y	1.68E-02	---	1.00E+03	**2E-05**	---	1.44E-03	2.50E-06		**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	7.82E-02	---	NA	**---**	---	6.70E-03	2.20E-05		**1E-07**
ISOPROPYL ALCOHOL	67-63-0	2.70E+01	Y	3.25E+00	---	2.00E+02	**2E-02**	---	2.78E-01	-		**---**
M,P-XYLENE	108-38-3	4.00E-01	Y	4.81E-02	---	1.00E+02	**5E-04**	---	4.12E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	3.20E-01	N	3.85E-02	---	6.00E+02	**6E-05**	---	3.30E-03	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.40E-01	Y	1.68E-02	---	1.00E+02	**2E-04**	---	1.44E-03	-		**---**
TETRACHLOROETHENE	127-18-4	4.60E+00	Y	5.53E-01	---	4.00E+01	**1E-02**	---	4.74E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	3.01E-02	---	2.00E+00	**2E-02**	---	2.58E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		**---**
VINYL CHLORIDE	75-01-4	8.00E-03	N	9.62E-04	---	8.00E+01	**1E-05**	---	8.25E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0041H**	**Total Inhalation**	**1E-01**	**0E+00**	**9E-07**
		Based on NDs only	**8E-02**	**0E+00**	**5E-07**
		Based on Detects only	**4E-02**	**All ND**	**4E-07**
		Site-related only	**3E-02**	**0E+00**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0041H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.20E-01	1.10E-02	6.60E-03	NA	NA	1.0E-08		1E-10	7E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	8.59E-03	5.15E-03	NA	NA	1.0E-06	kidney	9E-09	5E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	2.58E-03		NA		3.1E-06	NHL+liver	8E-09		---		**8E-09**
VINYL CHLORIDE	75-01-4	8.00E-03	2.75E-04	1.65E-04	NA	NA	4.4E-06		1E-09	7E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0045S**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	2.50E-01	N	3.01E-02	---	7.00E+00	**4E-03**	---	2.58E-03	2.60E-05		**7E-08**
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	4.00E+01	Y	4.81E+00	---	4.00E+01	**1E-01**	---	4.12E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	1.30E+00	Y	1.56E-01	---	2.00E+00	**8E-02**	---	1.34E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	5.30E-01	Y	6.37E-02	---	8.00E+01	**8E-04**	---	5.46E-03	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0045S**	**Total Inhalation**	**2E-01**	**0E+00**	**4E-07**
		Based on NDs only	**4E-03**	**0E+00**	**7E-08**
		Based on Detects only	**2E-01**	**All ND**	**3E-07**
		Site-related only	**2E-01**	**0E+00**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0045S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.30E+00	4.47E-02	2.68E-02	NA	NA	1.0E-06	kidney	4E-08	3E-08	---	---	**7E-08**
TRICHLOROETHENE	79-01-6	1.30E+00	1.34E-02		NA		3.1E-06	NHL+liver	4E-08		---		**4E-08**
VINYL CHLORIDE	75-01-4	5.30E-01	1.82E-02	1.09E-02	NA	NA	4.4E-06		8E-08	5E-08	---	---	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0047H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	9.00E+00	Y	1.08E+00	---	4.00E+01	**3E-02**	---	9.28E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	3.01E-02	---	2.00E+00	**2E-02**	---	2.58E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0047H**	**Total Inhalation**	**4E-02**	**0E+00**	**5E-08**
		Based on NDs only	**2E-02**	**0E+00**	**2E-08**
		Based on Detects only	**3E-02**	**All ND**	**2E-08**
		Site-related only	**4E-02**	**0E+00**	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0047H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	8.59E-03	5.15E-03	NA	NA	1.0E-06	kidney	9E-09	5E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	2.58E-03		NA		3.1E-06	NHL+liver	8E-09		---		**8E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0050H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	4.21E-02	---	4.00E+01	**1E-03**	---	3.61E-03	2.60E-07		**9E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	3.01E-02	---	2.00E+00	**2E-02**	---	2.58E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0050H**	**Total Inhalation**	**2E-02**	**0E+00**	**2E-08**
		Based on NDs only	**2E-02**	**0E+00**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**2E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0050H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	8.59E-03	5.15E-03	NA	NA	1.0E-06	kidney	9E-09	5E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	2.58E-03		NA		3.1E-06	NHL+liver	8E-09		---		**8E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0051H**

Pathway:
Inhalation of Indoor Air

			RME child	RME adult			RME lifetime		
		TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02		

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	6.19E-02	---	NA	---	---	5.30E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.99E-02	---	2.00E+00	**1E-02**	---	1.71E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	2.20E-01	Y	2.65E-02	---	3.00E+01	**9E-04**	---	2.27E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	---	4.23E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.20E+00	N	1.44E-01	---	2.00E+00	**7E-02**	---	1.24E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.80E-01	Y	9.38E-02	---	6.00E+01	**2E-03**	---	8.04E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	---	6.18E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	1.68E-02	---	7.00E+00	**2E-03**	---	1.44E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	4.45E-02	---	6.00E+01	**7E-04**	---	3.81E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	2.10E-01	Y	2.53E-02	---	8.00E+02	**3E-05**	---	2.16E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	6.30E-01	Y	7.58E-02	---	3.00E+01	**3E-03**	---	6.49E-03	7.80E-06		**5E-08**
BENZYL CHLORIDE	100-44-7	2.35E-01	N	2.83E-02	---	1.00E+00	**3E-02**	---	2.42E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	3.60E-01	Y	4.33E-02	---	NA	---	---	3.71E-03	3.70E-05		**1E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	9.62E-02	---	5.00E+00	**2E-02**	---	8.25E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	5.77E-02	---	1.00E+02	**6E-04**	---	4.95E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	2.10E+00	Y	2.53E-01	---	9.77E+01	**3E-03**	---	2.16E-02	2.30E-05		**5E-07**
ETHYL ACETATE	141-78-6	7.60E+00	Y	9.14E-01	---	7.00E+01	**1E-02**	---	7.83E-02	-		---
ETHYLBENZENE	100-41-4	9.50E-01	Y	1.14E-01	---	1.00E+03	**1E-04**	---	9.79E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	9.50E-01	N	1.14E-01	---	NA	---	---	9.79E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	5.20E+02	Y	6.25E+01	---	2.00E+02	**3E-01**	---	5.36E+00	-		---
M,P-XYLENE	108-38-3	3.00E+00	Y	3.61E-01	---	1.00E+02	**4E-03**	---	3.09E-02	-		---
METHYLENE CHLORIDE	75-09-2	9.40E-01	Y	1.13E-01	---	6.00E+02	**2E-04**	---	9.69E-03	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	8.30E-02	Y	9.98E-03	---	3.00E+00	**3E-03**	---	8.55E-04	3.40E-05		**3E-08**
O-XYLENE	95-47-6	9.10E-01	Y	1.09E-01	---	1.00E+02	**1E-03**	---	9.38E-03	-		---
TETRACHLOROETHENE	127-18-4	4.02E+02	Y	4.84E+01	---	4.00E+01	**1E+00**	---	4.15E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	6.00E-02	Y	7.21E-03	---	2.00E+00	**4E-03**	---	6.18E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	1.83E+00	Y	2.20E-01	---	2.00E+02	**1E-03**	---	1.89E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	7.82E-03	---	8.00E+01	**1E-04**	---	6.70E-04	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0051H**	**Total Inhalation**	**2E+00**	**0E+00**	**6E-06**
		Based on NDs only	**4E-01**	**0E+00**	**5E-06**
		Based on Detects only	**2E+00**	**All ND**	**2E-06**
		Site-related only	**1E+00**	**0E+00**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0051H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.40E-01	3.23E-02	1.94E-02	NA	NA	1.0E-08		3E-10	2E-10	---	---	**5E-10**
TRICHLOROETHENE	79-01-6	6.00E-02	2.06E-03	1.24E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	6.00E-02	6.18E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	2.23E-03	1.34E-03	NA	NA	4.4E-06		1E-08	6E-09	---	---	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0052H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.90E+00	Y	2.28E-01	---	4.00E+01	**6E-03**	---	1.96E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	3.01E-02	---	2.00E+00	**2E-02**	---	2.58E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0052H**	**Total Inhalation**	**2E-02**	**0E+00**	**3E-08**
		Based on NDs only	**2E-02**	**0E+00**	**2E-08**
		Based on Detects only	**6E-03**	**All ND**	**5E-09**
		Site-related only	**2E-02**	**0E+00**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0052H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	8.59E-03	5.15E-03	NA	NA	1.0E-06	kidney	9E-09	5E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	2.58E-03		NA		3.1E-06	NHL+liver	8E-09		---		**8E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0053H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	6.19E-02	---	NA	---	---	5.30E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	1.90E-01	Y	2.28E-02	---	2.00E+00	**1E-02**	---	1.96E-03	3.00E-05		**6E-08**
1,4-DIOXANE	123-91-1	2.10E-01	N	2.53E-02	---	3.00E+01	**8E-04**	---	2.16E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	---	4.23E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.45E+00	N	1.74E-01	---	2.00E+00	**9E-02**	---	1.49E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.10E-01	Y	7.33E-02	---	6.00E+01	**1E-03**	---	6.29E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	---	6.18E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	7.60E-02	Y	9.14E-03	---	7.00E+00	**1E-03**	---	7.83E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	4.45E-02	---	6.00E+01	**7E-04**	---	3.81E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	5.42E-02	---	8.00E+02	**7E-05**	---	4.64E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	9.60E-01	Y	1.15E-01	---	3.00E+01	**4E-03**	---	9.89E-03	7.80E-06		**8E-08**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	1.32E-02	---	1.00E+00	**1E-02**	---	1.13E-03	4.90E-05		**6E-08**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	6.04E-02	---	NA	---	---	5.18E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	3.70E-01	N	4.45E-02	---	5.00E+00	**9E-03**	---	3.81E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	5.53E-02	---	1.00E+02	**6E-04**	---	4.74E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	8.78E-01	Y	1.06E-01	---	9.77E+01	**1E-03**	---	9.05E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	3.13E+00	Y	3.77E-01	---	7.00E+01	**5E-03**	---	3.23E-02	-		**---**
ETHYLBENZENE	100-41-4	3.30E+00	Y	3.97E-01	---	1.00E+03	**4E-04**	---	3.40E-02	2.50E-06		**9E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.95E+00	N	2.34E-01	---	NA	---	---	2.01E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	5.40E+00	Y	6.49E-01	---	2.00E+02	**3E-03**	---	5.57E-02	-		**---**
M,P-XYLENE	108-38-3	2.30E+00	Y	2.77E-01	---	1.00E+02	**3E-03**	---	2.37E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	8.33E-01	Y	1.00E-01	---	6.00E+02	**2E-04**	---	8.59E-03	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	3.60E-02	Y	4.33E-03	---	3.00E+00	**1E-03**	---	3.71E-04	3.40E-05		**1E-08**
O-XYLENE	95-47-6	8.25E-01	Y	9.91E-02	---	1.00E+02	**1E-03**	---	8.50E-03	-		**---**
TETRACHLOROETHENE	127-18-4	2.41E+01	Y	2.90E+00	---	4.00E+01	**7E-02**	---	2.48E-01	2.60E-07		**6E-08**
TRICHLOROETHENE	79-01-6	4.70E-01	Y	5.65E-02	---	2.00E+00	**3E-02**	---	4.84E-03	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	3.19E-02	---	2.00E+02	**2E-04**	---	2.73E-03	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	7.82E-03	---	8.00E+01	**1E-04**	---	6.70E-04	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0053H**	**Total Inhalation**	**5E-01**	**0E+00**	**5E-06**
		Based on NDs only	**4E-01**	**0E+00**	**5E-06**
		Based on Detects only	**1E-01**	**All ND**	**6E-07**
		Site-related only	**1E-01**	**0E+00**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0053H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.33E-01	2.86E-02	1.72E-02	NA	NA	1.0E-08		3E-10	2E-10	---	---	**5E-10**
TRICHLOROETHENE	79-01-6	4.70E-01	1.61E-02	9.69E-03	NA	NA	1.0E-06	kidney	2E-08	1E-08	---	---	**3E-08**
TRICHLOROETHENE	79-01-6	4.70E-01	4.84E-03		NA		3.1E-06	NHL+liver	2E-08		---		**2E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	2.23E-03	1.34E-03	NA	NA	4.4E-06		1E-08	6E-09	---	---	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0054H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	2.14E+01	Y	2.57E+00	---	4.00E+01	**6E-02**	---	2.21E-01	2.60E-07		**6E-08**
TRICHLOROETHENE	79-01-6	9.30E+00	Y	1.12E+00	---	2.00E+00	**6E-01**	---	9.59E-02	4.10E-06	M	**8E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0054H**	**Total Inhalation**	**6E-01**	**0E+00**	**9E-07**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**6E-01**	**All ND**	**9E-07**
		Site-related only	**6E-01**	**0E+00**	**9E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0054H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.30E+00	3.20E-01	1.92E-01	NA	NA	1.0E-06	kidney	3E-07	2E-07	---	---	**5E-07**
TRICHLOROETHENE	79-01-6	9.30E+00	9.59E-02		NA		3.1E-06	NHL+liver	3E-07		---		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0055H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.50E+00	Y	1.80E-01	---	4.00E+01	**5E-03**	---	1.55E-02	2.60E-07		**4E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	3.01E-02	---	2.00E+00	**2E-02**	---	2.58E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0055H**	**Total Inhalation**	**2E-02**	**0E+00**	**3E-08**
		Based on NDs only	**2E-02**	**0E+00**	**2E-08**
		Based on Detects only	**5E-03**	**All ND**	**4E-09**
		Site-related only	**2E-02**	**0E+00**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0055H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	8.59E-03	5.15E-03	NA	NA	1.0E-06	kidney	9E-09	5E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	2.58E-03		NA		3.1E-06	NHL+liver	8E-09		---		**8E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0056H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	6.90E+00	Y	8.30E-01	---	4.00E+01	**2E-02**	---	7.11E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	3.01E-02	---	2.00E+00	**2E-02**	---	2.58E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0056H**	**Total Inhalation**	**4E-02**	**0E+00**	**4E-08**
		Based on NDs only	**2E-02**	**0E+00**	**2E-08**
		Based on Detects only	**2E-02**	**All ND**	**2E-08**
		Site-related only	**4E-02**	**0E+00**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0056H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	8.59E-03	5.15E-03	NA	NA	1.0E-06	kidney	9E-09	5E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	2.58E-03		NA		3.1E-06	NHL+liver	8E-09		---		**8E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0057H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	4.21E-02	---	4.00E+01	**1E-03**	---	3.61E-03	2.60E-07		**9E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	3.01E-02	---	2.00E+00	**2E-02**	---	2.58E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0057H**	**Total Inhalation**	**2E-02**	**0E+00**	**2E-08**
		Based on NDs only	**2E-02**	**0E+00**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**2E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0057H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	8.59E-03	5.15E-03	NA	NA	1.0E-06	kidney	9E-09	5E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	2.58E-03		NA		3.1E-06	NHL+liver	8E-09		---		**8E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0058H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	4.21E-02	---	4.00E+01	**1E-03**	---	3.61E-03	2.60E-07		**9E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	3.01E-02	---	2.00E+00	**2E-02**	---	2.58E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0058H**	**Total Inhalation**	**2E-02**	**0E+00**	**2E-08**
		Based on NDs only	**2E-02**	**0E+00**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**2E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0058H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	8.59E-03	5.15E-03	NA	NA	1.0E-06	kidney	9E-09	5E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	2.58E-03		NA		3.1E-06	NHL+liver	8E-09		---		**8E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0059H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	7.00E-02	N	8.42E-03	---	NA	---	---	7.21E-04	5.80E-05		**4E-08**
1,3-BUTADIENE	106-99-0	3.60E-01	Y	4.33E-02	---	2.00E+00	**2E-02**	---	3.71E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	4.70E+00	Y	5.65E-01	---	3.00E+01	**2E-02**	---	4.84E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.95E-02	N	5.95E-03	---	2.00E-01	**3E-02**	---	5.10E-04	1.60E-05		**8E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.00E+00	Y	4.81E-01	---	2.00E+00	**2E-01**	---	4.12E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	6.10E-01	Y	7.33E-02	---	6.00E+01	**1E-03**	---	6.29E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.60E-02	N	4.33E-03	---	9.00E+00	**5E-04**	---	3.71E-04	6.00E-04		**2E-07**
1,2-DICHLOROETHANE	107-06-2	8.60E-02	Y	1.03E-02	---	7.00E+00	**1E-03**	---	8.86E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	1.60E+00	Y	1.92E-01	---	4.00E+00	**5E-02**	---	1.65E-02	3.70E-06		**6E-08**
1,3,5-Trimethylbenzene	108-67-8	1.45E-01	N	1.74E-02	---	6.00E+01	**3E-04**	---	1.49E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	1.80E-01	Y	2.16E-02	---	8.00E+02	**3E-05**	---	1.86E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	1.90E+00	Y	2.28E-01	---	3.00E+01	**8E-03**	---	1.96E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	1.50E-01	N	1.80E-02	---	1.00E+00	**2E-02**	---	1.55E-03	4.90E-05		**8E-08**
BROMODICHLOROMETHANE	75-27-4	2.30E-01	Y	2.77E-02	---	NA	---	---	2.37E-03	3.70E-05		**9E-08**
BROMOMETHANE	74-83-9	5.00E-01	N	6.01E-02	---	5.00E+00	**1E-02**	---	5.15E-03	-		---
CARBON TETRACHLORIDE	56-23-5	1.50E+00	Y	1.80E-01	---	1.00E+02	**2E-03**	---	1.55E-02	6.00E-06		**9E-08**
CHLOROFORM	67-66-3	1.70E+00	Y	2.04E-01	---	9.77E+01	**2E-03**	---	1.75E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	3.10E+00	Y	3.73E-01	---	7.00E+01	**5E-03**	---	3.20E-02	-		---
ETHYLBENZENE	100-41-4	7.40E-01	Y	8.90E-02	---	1.00E+03	**9E-05**	---	7.63E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.40E+00	Y	5.29E-01	---	NA	---	---	4.53E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	8.00E+01	Y	9.62E+00	---	2.00E+02	**5E-02**	---	8.25E-01	-		---
M,P-XYLENE	108-38-3	3.00E+00	Y	3.61E-01	---	1.00E+02	**4E-03**	---	3.09E-02	-		---
METHYLENE CHLORIDE	75-09-2	9.10E-01	Y	1.09E-01	---	6.00E+02	**2E-04**	---	9.38E-03	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	1.00E-01	Y	1.20E-02	---	3.00E+00	**4E-03**	---	1.03E-03	3.40E-05		**4E-08**
O-XYLENE	95-47-6	1.30E+00	Y	1.56E-01	---	1.00E+02	**2E-03**	---	1.34E-02	-		---
TETRACHLOROETHENE	127-18-4	2.20E+02	Y	2.65E+01	---	4.00E+01	**7E-01**	---	2.27E+00	2.60E-07		**6E-07**
TRICHLOROETHENE	79-01-6	1.24E+01	Y	1.49E+00	---	2.00E+00	**7E-01**	---	1.27E-01	4.10E-06	M	**1E-06**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	2.90E-02	N	3.49E-03	---	8.00E+01	**4E-05**	---	2.99E-04	4.40E-06	M	**7E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0059H**	**Total Inhalation**	**2E+00**	**0E+00**	**4E-06**
		Based on NDs only	**6E-02**	**0E+00**	**4E-07**
		Based on Detects only	**2E+00**	**All ND**	**4E-06**
		Site-related only	**1E+00**	**0E+00**	**2E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0059H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.10E-01	3.13E-02	1.88E-02	NA	NA	1.0E-08		3E-10	2E-10	---	---	**5E-10**
TRICHLOROETHENE	79-01-6	1.24E+01	4.24E-01	2.55E-01	NA	NA	1.0E-06	kidney	4E-07	3E-07	---	---	**7E-07**
TRICHLOROETHENE	79-01-6	1.24E+01	1.27E-01		NA		3.1E-06	NHL+liver	4E-07		---		**4E-07**
VINYL CHLORIDE	75-01-4	2.90E-02	9.96E-04	5.98E-04	NA	NA	4.4E-06		4E-09	3E-09	---	---	**7E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0060H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	4.21E-02	---	4.00E+01	**1E-03**	---	3.61E-03	2.60E-07		**9E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	3.01E-02	---	2.00E+00	**2E-02**	---	2.58E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0060H**	**Total Inhalation**	**2E-02**	**0E+00**	**2E-08**
		Based on NDs only	**2E-02**	**0E+00**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**2E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0060H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	8.59E-03	5.15E-03	NA	NA	1.0E-06	kidney	9E-09	5E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	2.58E-03		NA		3.1E-06	NHL+liver	8E-09		---		**8E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0061H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	4.21E-02	---	4.00E+01	**1E-03**	---	3.61E-03	2.60E-07		**9E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	3.01E-02	---	2.00E+00	**2E-02**	---	2.58E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0061H**	**Total Inhalation**	**2E-02**	**0E+00**	**2E-08**
		Based on NDs only	**2E-02**	**0E+00**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**2E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0061H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	8.59E-03	5.15E-03	NA	NA	1.0E-06	kidney	9E-09	5E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	2.58E-03		NA		3.1E-06	NHL+liver	8E-09		---		**8E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0062H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	1.26E-03	---	NA	---	---	1.08E-04	5.80E-05		**6E-09**
1,3-BUTADIENE	106-99-0	4.95E-02	N	5.95E-03	---	2.00E+00	**3E-03**	---	5.10E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	7.00E-02	N	8.42E-03	---	3.00E+01	**3E-04**	---	7.21E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	8.42E-04	---	2.00E-01	**4E-03**	---	7.21E-05	1.60E-05		**1E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.85E-01	N	5.83E-02	---	2.00E+00	**3E-02**	---	5.00E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	2.40E-01	Y	2.89E-02	---	6.00E+01	**5E-04**	---	2.47E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	3.97E-03	---	9.00E+00	**4E-04**	---	3.40E-04	6.00E-04		**2E-07**
1,2-DICHLOROETHANE	107-06-2	1.70E-01	Y	2.04E-02	---	7.00E+00	**3E-03**	---	1.75E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	1.08E-02	---	4.00E+00	**3E-03**	---	9.28E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	7.21E-03	---	6.00E+01	**1E-04**	---	6.18E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	6.01E-03	---	8.00E+02	**8E-06**	---	5.15E-04	1.10E-05		**6E-09**
BENZENE	71-43-2	1.00E+00	Y	1.20E-01	---	3.00E+01	**4E-03**	---	1.03E-02	7.80E-06		**8E-08**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	1.02E-02	---	1.00E+00	**1E-02**	---	8.76E-04	4.90E-05		**4E-08**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	1.50E-02	---	NA	---	---	1.29E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	6.50E-01	N	7.82E-02	---	5.00E+00	**2E-02**	---	6.70E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	4.81E-02	---	1.00E+02	**5E-04**	---	4.12E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	3.40E-01	Y	4.09E-02	---	9.77E+01	**4E-04**	---	3.50E-03	2.30E-05		**8E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	3.00E-01	Y	3.61E-02	---	1.00E+03	**4E-05**	---	3.09E-03	2.50E-06		**8E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	7.82E-02	---	NA	---	---	6.70E-03	2.20E-05		**1E-07**
ISOPROPYL ALCOHOL	67-63-0	1.80E+01	Y	2.16E+00	---	2.00E+02	**1E-02**	---	1.86E-01	-		**---**
M,P-XYLENE	108-38-3	1.10E+00	Y	1.32E-01	---	1.00E+02	**1E-03**	---	1.13E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	2.65E-01	N	3.19E-02	---	6.00E+02	**5E-05**	---	2.73E-03	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	3.60E-01	Y	4.33E-02	---	1.00E+02	**4E-04**	---	3.71E-03	-		**---**
TETRACHLOROETHENE	127-18-4	5.00E-02	Y	6.01E-03	---	4.00E+01	**2E-04**	---	5.15E-04	2.60E-07		**1E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	3.01E-02	---	2.00E+00	**2E-02**	---	2.58E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	8.00E-03	N	9.62E-04	---	8.00E+01	**1E-05**	---	8.25E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0062H**	**Total Inhalation**	**1E-01**	**0E+00**	**7E-07**
		Based on NDs only	**8E-02**	**0E+00**	**5E-07**
		Based on Detects only	**2E-02**	**All ND**	**2E-07**
		Site-related only	**2E-02**	**0E+00**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0062H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.65E-01	9.10E-03	5.46E-03	NA	NA	1.0E-08		9E-11	5E-11	---	---	**1E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	8.59E-03	5.15E-03	NA	NA	1.0E-06	kidney	9E-09	5E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	2.58E-03		NA		3.1E-06	NHL+liver	8E-09		---		**8E-09**
VINYL CHLORIDE	75-01-4	8.00E-03	2.75E-04	1.65E-04	NA	NA	4.4E-06		1E-09	7E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0063H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	4.00E+00	Y	4.81E-01	---	4.00E+01	**1E-02**	---	4.12E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	3.01E-02	---	2.00E+00	**2E-02**	---	2.58E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0063H**	**Total Inhalation**	**3E-02**	**0E+00**	**3E-08**
		Based on NDs only	**2E-02**	**0E+00**	**2E-08**
		Based on Detects only	**1E-02**	**All ND**	**1E-08**
		Site-related only	**3E-02**	**0E+00**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0063H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	8.59E-03	5.15E-03	NA	NA	1.0E-06	kidney	9E-09	5E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	2.58E-03		NA		3.1E-06	NHL+liver	8E-09		---		**8E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0064H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	6.19E-02	---	NA	---	---	5.30E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.99E-02	---	2.00E+00	**1E-02**	---	1.71E-03	3.00E-05		**5E-08**
1,4-DIOXANE	123-91-1	5.10E-01	Y	6.13E-02	---	3.00E+01	**2E-03**	---	5.26E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	4.93E-02	---	2.00E-01	**2E-01**	---	4.23E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.87E-01	---	2.00E+00	**9E-02**	---	1.61E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E-01	Y	1.44E-02	---	6.00E+01	**2E-04**	---	1.24E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	7.21E-02	---	9.00E+00	**8E-03**	---	6.18E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	7.50E-02	Y	9.02E-03	---	7.00E+00	**1E-03**	---	7.73E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	4.39E-02	---	4.00E+00	**1E-02**	---	3.76E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	9.02E-02	---	6.00E+01	**2E-03**	---	7.73E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	1.08E-01	---	8.00E+02	**1E-04**	---	9.29E-03	1.10E-05		**1E-07**
BENZENE	71-43-2	6.07E-01	Y	7.29E-02	---	3.00E+01	**2E-03**	---	6.25E-03	7.80E-06		**5E-08**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	1.15E-01	---	1.00E+00	**1E-01**	---	9.87E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	6.04E-02	---	NA	---	---	5.18E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	5.50E-01	N	6.61E-02	---	5.00E+00	**1E-02**	---	5.67E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	4.81E-02	---	1.00E+02	**5E-04**	---	4.12E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	7.60E-01	Y	9.14E-02	---	9.77E+01	**9E-04**	---	7.83E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	2.90E+00	Y	3.49E-01	---	7.00E+01	**5E-03**	---	2.99E-02	-		---
ETHYLBENZENE	100-41-4	1.70E+00	Y	2.04E-01	---	1.00E+03	**2E-04**	---	1.75E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.92E-01	---	NA	---	---	1.65E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	1.00E+01	Y	1.20E+00	---	2.00E+02	**6E-03**	---	1.03E-01	-		---
M,P-XYLENE	108-38-3	5.65E+00	Y	6.79E-01	---	1.00E+02	**7E-03**	---	5.82E-02	-		---
METHYLENE CHLORIDE	75-09-2	1.10E+00	Y	1.32E-01	---	6.00E+02	**2E-04**	---	1.13E-02	1.00E-08	M	**6E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.52E+00	Y	1.83E-01	---	1.00E+02	**2E-03**	---	1.57E-02	-		---
TETRACHLOROETHENE	127-18-4	1.30E+01	Y	1.56E+00	---	4.00E+01	**4E-02**	---	1.34E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	1.50E-01	Y	1.80E-02	---	2.00E+00	**9E-03**	---	1.55E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	4.23E-02	---	2.00E+02	**2E-04**	---	3.63E-03	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	7.82E-03	---	8.00E+01	**1E-04**	---	6.70E-04	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0064H**	**Total Inhalation**	**6E-01**	**0E+00**	**6E-06**
		Based on NDs only	**5E-01**	**0E+00**	**5E-06**
		Based on Detects only	**8E-02**	**All ND**	**4E-07**
		Site-related only	**5E-02**	**0E+00**	**9E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0064H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.10E+00	3.78E-02	2.27E-02	NA	NA	1.0E-08		4E-10	2E-10	---	---	**6E-10**
TRICHLOROETHENE	79-01-6	1.50E-01	5.15E-03	3.09E-03	NA	NA	1.0E-06	kidney	5E-09	3E-09	---	---	**8E-09**
TRICHLOROETHENE	79-01-6	1.50E-01	1.55E-03		NA		3.1E-06	NHL+liver	5E-09		---		**5E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	2.23E-03	1.34E-03	NA	NA	4.4E-06		1E-08	6E-09	---	---	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0065H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.50E-02	N	6.61E-03	---	NA	---	---	5.67E-04	5.80E-05		**3E-08**
1,3-BUTADIENE	106-99-0	6.00E-02	N	7.21E-03	---	2.00E+00	**4E-03**	---	6.18E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	2.35E-01	N	2.83E-02	---	3.00E+01	**9E-04**	---	2.42E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.05E-02	N	4.87E-03	---	2.00E-01	**2E-02**	---	4.17E-04	1.60E-05		**7E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	1.65E+00	N	1.98E-01	---	2.00E+00	**1E-01**	---	1.70E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.50E-01	Y	5.41E-02	---	6.00E+01	**9E-04**	---	4.64E-03	-		---
1,2-DIBROMOETHANE	106-93-4	2.95E-02	N	3.55E-03	---	9.00E+00	**4E-04**	---	3.04E-04	6.00E-04		**2E-07**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	9.26E-03	---	7.00E+00	**1E-03**	---	7.94E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	1.35E-01	N	1.62E-02	---	4.00E+00	**4E-03**	---	1.39E-03	3.70E-06		**5E-09**
1,3,5-Trimethylbenzene	108-67-8	1.20E-01	N	1.44E-02	---	6.00E+01	**2E-04**	---	1.24E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	N	1.02E-02	---	8.00E+02	**1E-05**	---	8.76E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	8.60E-01	Y	1.03E-01	---	3.00E+01	**3E-03**	---	8.86E-03	7.80E-06		**7E-08**
BENZYL CHLORIDE	100-44-7	1.25E-01	N	1.50E-02	---	1.00E+00	**2E-02**	---	1.29E-03	4.90E-05		**6E-08**
BROMODICHLOROMETHANE	75-27-4	2.95E-01	N	3.55E-02	---	NA	---	---	3.04E-03	3.70E-05		**1E-07**
BROMOMETHANE	74-83-9	4.15E-01	N	4.99E-02	---	5.00E+00	**1E-02**	---	4.28E-03	-		---
CARBON TETRACHLORIDE	56-23-5	5.40E-01	Y	6.49E-02	---	1.00E+02	**6E-04**	---	5.57E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	6.70E-01	Y	8.06E-02	---	9.77E+01	**8E-04**	---	6.91E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	2.00E+00	Y	2.40E-01	---	7.00E+01	**3E-03**	---	2.06E-02	-		---
ETHYLBENZENE	100-41-4	3.60E-01	Y	4.33E-02	---	1.00E+03	**4E-05**	---	3.71E-03	2.50E-06		**9E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	2.20E+00	N	2.65E-01	---	NA	---	---	2.27E-02	2.20E-05		**5E-07**
ISOPROPYL ALCOHOL	67-63-0	1.00E+01	Y	1.20E+00	---	2.00E+02	**6E-03**	---	1.03E-01	-		---
M,P-XYLENE	108-38-3	1.40E+00	Y	1.68E-01	---	1.00E+02	**2E-03**	---	1.44E-02	-		---
METHYLENE CHLORIDE	75-09-2	6.20E-01	Y	7.46E-02	---	6.00E+02	**1E-04**	---	6.39E-03	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	4.50E-02	Y	5.41E-03	---	3.00E+00	**2E-03**	---	4.64E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	4.60E-01	Y	5.53E-02	---	1.00E+02	**6E-04**	---	4.74E-03	-		---
TETRACHLOROETHENE	127-18-4	1.60E-01	Y	1.92E-02	---	4.00E+01	**5E-04**	---	1.65E-03	2.60E-07		**4E-10**
TRICHLOROETHENE	79-01-6	9.00E-02	N	1.08E-02	---	2.00E+00	**5E-03**	---	9.28E-04	4.10E-06	M	**8E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	2.40E-02	N	2.89E-03	---	8.00E+01	**4E-05**	---	2.47E-04	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0065H**	**Total Inhalation**	**2E-01**	**0E+00**	**1E-06**
		Based on NDs only	**2E-01**	**0E+00**	**1E-06**
		Based on Detects only	**2E-02**	**All ND**	**3E-07**
		Site-related only	**7E-03**	**0E+00**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0065H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.20E-01	2.13E-02	1.28E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	9.00E-02	3.09E-03	1.86E-03	NA	NA	1.0E-06	kidney	3E-09	2E-09	---	---	**5E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	9.28E-04		NA		3.1E-06	NHL+liver	3E-09		---		**3E-09**
VINYL CHLORIDE	75-01-4	2.40E-02	8.25E-04	4.95E-04	NA	NA	4.4E-06		4E-09	2E-09	---	---	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0066H**

Pathway:
Inhalation of Indoor Air

			RME child	RME adult			RME lifetime		
		TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02		

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.25E-02	N	2.71E-03	---	NA	---	---	2.32E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	1.00E-01	N	1.20E-02	---	2.00E+00	**6E-03**	---	1.03E-03	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	4.30E-01	Y	5.17E-02	---	3.00E+01	**2E-03**	---	4.43E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.10E-02	N	2.53E-03	---	2.00E-01	**1E-02**	---	2.16E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	8.42E-02	---	2.00E+00	**4E-02**	---	7.21E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.30E-01	Y	5.17E-02	---	6.00E+01	**9E-04**	---	4.43E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	9.02E-03	---	9.00E+00	**1E-03**	---	7.73E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	3.50E-01	Y	4.21E-02	---	7.00E+00	**6E-03**	---	3.61E-03	2.60E-05		**9E-08**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	1.26E-02	---	4.00E+00	**3E-03**	---	1.08E-03	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	1.56E-02	---	6.00E+01	**3E-04**	---	1.34E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	N	1.02E-02	---	8.00E+02	**1E-05**	---	8.76E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	9.90E-01	Y	1.19E-01	---	3.00E+01	**4E-03**	---	1.02E-02	7.80E-06		**8E-08**
BENZYL CHLORIDE	100-44-7	2.50E-01	N	3.01E-02	---	1.00E+00	**3E-02**	---	2.58E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	2.55E-01	N	3.07E-02	---	NA	---	---	2.63E-03	3.70E-05		**1E-07**
BROMOMETHANE	74-83-9	8.50E-01	N	1.02E-01	---	5.00E+00	**2E-02**	---	8.76E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	5.53E-02	---	1.00E+02	**6E-04**	---	4.74E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	6.30E-01	Y	7.58E-02	---	9.77E+01	**8E-04**	---	6.49E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	6.70E+00	Y	8.06E-01	---	7.00E+01	**1E-02**	---	6.91E-02	-		---
ETHYLBENZENE	100-41-4	5.10E-01	Y	6.13E-02	---	1.00E+03	**6E-05**	---	5.26E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	9.62E-02	---	NA	---	---	8.25E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	1.10E+01	Y	1.32E+00	---	2.00E+02	**7E-03**	---	1.13E-01	-		---
M,P-XYLENE	108-38-3	1.50E+00	Y	1.80E-01	---	1.00E+02	**2E-03**	---	1.55E-02	-		---
METHYLENE CHLORIDE	75-09-2	3.35E-01	N	4.03E-02	---	6.00E+02	**7E-05**	---	3.45E-03	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	2.55E-02	N	3.07E-03	---	3.00E+00	**1E-03**	---	2.63E-04	3.40E-05		**9E-09**
O-XYLENE	95-47-6	3.70E-01	Y	4.45E-02	---	1.00E+02	**4E-04**	---	3.81E-03	-		---
TETRACHLOROETHENE	127-18-4	9.40E-02	Y	1.13E-02	---	4.00E+01	**3E-04**	---	9.69E-04	2.60E-07		**3E-10**
TRICHLOROETHENE	79-01-6	1.90E-01	Y	2.28E-02	---	2.00E+00	**1E-02**	---	1.96E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	7.00E-03	N	8.42E-04	---	8.00E+01	**1E-05**	---	7.21E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0066H**	**Total Inhalation**	**2E-01**	**0E+00**	**1E-06**
		Based on NDs only	**1E-01**	**0E+00**	**9E-07**
		Based on Detects only	**5E-02**	**All ND**	**4E-07**
		Site-related only	**1E-02**	**0E+00**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0066H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.35E-01	1.15E-02	6.91E-03	NA	NA	1.0E-08		1E-10	7E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	1.90E-01	6.53E-03	3.92E-03	NA	NA	1.0E-06	kidney	7E-09	4E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	1.90E-01	1.96E-03		NA		3.1E-06	NHL+liver	6E-09		---		**6E-09**
VINYL CHLORIDE	75-01-4	7.00E-03	2.40E-04	1.44E-04	NA	NA	4.4E-06		1E-09	6E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0069H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	3.00E-02	N	3.61E-03	---	NA	---	---	3.09E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	1.35E-01	N	1.62E-02	---	2.00E+00	**8E-03**	---	1.39E-03	3.00E-05		**4E-08**
1,4-DIOXANE	123-91-1	2.90E-01	Y	3.49E-02	---	3.00E+01	**1E-03**	---	2.99E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.80E-02	N	3.37E-03	---	2.00E-01	**2E-02**	---	2.89E-04	1.60E-05		**5E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	9.00E-01	N	1.08E-01	---	2.00E+00	**5E-02**	---	9.28E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	8.30E-01	Y	9.98E-02	---	6.00E+01	**2E-03**	---	8.55E-03	-		---
1,2-DIBROMOETHANE	106-93-4	1.00E-01	N	1.20E-02	---	9.00E+00	**1E-03**	---	1.03E-03	6.00E-04		**6E-07**
1,2-DICHLOROETHANE	107-06-2	1.40E+00	Y	1.68E-01	---	7.00E+00	**2E-02**	---	1.44E-02	2.60E-05		**4E-07**
1,2-DICHLOROPROPANE	78-87-5	1.40E-01	N	1.68E-02	---	4.00E+00	**4E-03**	---	1.44E-03	3.70E-06		**5E-09**
1,3,5-Trimethylbenzene	108-67-8	1.70E-01	N	2.04E-02	---	6.00E+01	**3E-04**	---	1.75E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	Y	1.02E-02	---	8.00E+02	**1E-05**	---	8.76E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	8.40E-01	Y	1.01E-01	---	3.00E+01	**3E-03**	---	8.66E-03	7.80E-06		**7E-08**
BENZYL CHLORIDE	100-44-7	3.40E-01	N	4.09E-02	---	1.00E+00	**4E-02**	---	3.50E-03	4.90E-05		**2E-07**
BROMODICHLOROMETHANE	75-27-4	3.45E-01	N	4.15E-02	---	NA	---	---	3.56E-03	3.70E-05		**1E-07**
BROMOMETHANE	74-83-9	1.15E+00	N	1.38E-01	---	5.00E+00	**3E-02**	---	1.19E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	5.29E-02	---	1.00E+02	**5E-04**	---	4.53E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	6.00E-01	Y	7.21E-02	---	9.77E+01	**7E-04**	---	6.18E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	1.10E+00	Y	1.32E-01	---	7.00E+01	**2E-03**	---	1.13E-02	-		---
ETHYLBENZENE	100-41-4	2.30E-01	Y	2.77E-02	---	1.00E+03	**3E-05**	---	2.37E-03	2.50E-06		**6E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.10E+00	N	1.32E-01	---	NA	---	---	1.13E-02	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	4.60E+00	Y	5.53E-01	---	2.00E+02	**3E-03**	---	4.74E-02	-		---
M,P-XYLENE	108-38-3	8.70E-01	Y	1.05E-01	---	1.00E+02	**1E-03**	---	8.97E-03	-		---
METHYLENE CHLORIDE	75-09-2	7.90E-01	Y	9.50E-02	---	6.00E+02	**2E-04**	---	8.14E-03	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	2.70E-02	N	3.25E-03	---	3.00E+00	**1E-03**	---	2.78E-04	3.40E-05		**9E-09**
O-XYLENE	95-47-6	3.60E-01	Y	4.33E-02	---	1.00E+02	**4E-04**	---	3.71E-03	-		---
TETRACHLOROETHENE	127-18-4	3.40E-01	Y	4.09E-02	---	4.00E+01	**1E-03**	---	3.50E-03	2.60E-07		**9E-10**
TRICHLOROETHENE	79-01-6	1.30E-01	Y	1.56E-02	---	2.00E+00	**8E-03**	---	1.34E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	9.00E-03	N	1.08E-03	---	8.00E+01	**1E-05**	---	9.28E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0069H**	**Total Inhalation**	**2E-01**	**0E+00**	**2E-06**
		Based on NDs only	**2E-01**	**0E+00**	**1E-06**
		Based on Detects only	**5E-02**	**All ND**	**7E-07**
		Site-related only	**1E-02**	**0E+00**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0069H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.90E-01	2.71E-02	1.63E-02	NA	NA	1.0E-08		3E-10	2E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	1.30E-01	4.47E-03	2.68E-03	NA	NA	1.0E-06	kidney	4E-09	3E-09	---	---	**7E-09**
TRICHLOROETHENE	79-01-6	1.30E-01	1.34E-03		NA		3.1E-06	NHL+liver	4E-09		---		**4E-09**
VINYL CHLORIDE	75-01-4	9.00E-03	3.09E-04	1.86E-04	NA	NA	4.4E-06		1E-09	8E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0071H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	2.59E-03	---	NA	---	---	2.22E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	9.50E-02	N	1.14E-02	---	2.00E+00	**6E-03**	---	9.79E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	6.00E-02	N	7.21E-03	---	3.00E+01	**2E-04**	---	6.18E-04	5.00E-06		**3E-09**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	2.40E-03	---	2.00E-01	**1E-02**	---	2.06E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	7.82E-02	---	2.00E+00	**4E-02**	---	6.70E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E-01	N	1.68E-02	---	6.00E+01	**3E-04**	---	1.44E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	8.42E-03	---	9.00E+00	**9E-04**	---	7.21E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	8.00E-01	Y	9.62E-02	---	7.00E+00	**1E-02**	---	8.25E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	1.20E-02	---	4.00E+00	**3E-03**	---	1.03E-03	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	1.20E-01	N	1.44E-02	---	6.00E+01	**2E-04**	---	1.24E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	9.62E-03	---	8.00E+02	**1E-05**	---	8.25E-04	1.10E-05		**9E-09**
BENZENE	71-43-2	6.50E-01	Y	7.82E-02	---	3.00E+01	**3E-03**	---	6.70E-03	7.80E-06		**5E-08**
BENZYL CHLORIDE	100-44-7	2.40E-01	N	2.89E-02	---	1.00E+00	**3E-02**	---	2.47E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	2.45E-01	N	2.95E-02	---	NA	---	---	2.53E-03	3.70E-05		**9E-08**
BROMOMETHANE	74-83-9	8.00E-01	N	9.62E-02	---	5.00E+00	**2E-02**	---	8.25E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	5.53E-02	---	1.00E+02	**6E-04**	---	4.74E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.60E+00	Y	1.92E-01	---	9.77E+01	**2E-03**	---	1.65E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	2.60E+01	Y	3.13E+00	---	7.00E+01	**4E-02**	---	2.68E-01	-		---
ETHYLBENZENE	100-41-4	3.00E-01	Y	3.61E-02	---	1.00E+03	**4E-05**	---	3.09E-03	2.50E-06		**8E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	9.62E-02	---	NA	---	---	8.25E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	4.30E+00	Y	5.17E-01	---	2.00E+02	**3E-03**	---	4.43E-02	-		---
M,P-XYLENE	108-38-3	8.50E-01	Y	1.02E-01	---	1.00E+02	**1E-03**	---	8.76E-03	-		---
METHYLENE CHLORIDE	75-09-2	3.15E-01	N	3.79E-02	---	6.00E+02	**6E-05**	---	3.25E-03	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	2.75E-02	N	3.31E-03	---	3.00E+00	**1E-03**	---	2.83E-04	3.40E-05		**1E-08**
O-XYLENE	95-47-6	3.20E-01	Y	3.85E-02	---	1.00E+02	**4E-04**	---	3.30E-03	-		---
TETRACHLOROETHENE	127-18-4	3.30E-01	Y	3.97E-02	---	4.00E+01	**1E-03**	---	3.40E-03	2.60E-07		**9E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	N	6.01E-03	---	2.00E+00	**3E-03**	---	5.15E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	6.50E-03	N	7.82E-04	---	8.00E+01	**1E-05**	---	6.70E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0071H**	**Total Inhalation**	**2E-01**	**0E+00**	**2E-06**
		Based on NDs only	**1E-01**	**0E+00**	**9E-07**
		Based on Detects only	**7E-02**	**All ND**	**7E-07**
		Site-related only	**4E-03**	**0E+00**	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0071H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.15E-01	1.08E-02	6.49E-03	NA	NA	1.0E-08		1E-10	6E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	1.72E-03	1.03E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	5.15E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	6.50E-03	2.23E-04	1.34E-04	NA	NA	4.4E-06		1E-09	6E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0072H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.90E-02	N	3.49E-03	---	NA	---	---	2.99E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	6.00E-02	N	7.21E-03	---	2.00E+00	**4E-03**	---	6.18E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	1.00E-01	N	1.20E-02	---	3.00E+01	**4E-04**	---	1.03E-03	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.40E-02	N	1.68E-03	---	2.00E-01	**8E-03**	---	1.44E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	7.21E-02	---	2.00E+00	**4E-02**	---	6.18E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.70E-01	Y	3.25E-02	---	6.00E+01	**5E-04**	---	2.78E-03	-		---
1,2-DIBROMOETHANE	106-93-4	5.00E-02	N	6.01E-03	---	9.00E+00	**7E-04**	---	5.15E-04	6.00E-04		**3E-07**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	1.32E-02	---	7.00E+00	**2E-03**	---	1.13E-03	2.60E-05		**3E-08**
1,2-DICHLOROPROPANE	78-87-5	1.15E-01	N	1.38E-02	---	4.00E+00	**3E-03**	---	1.19E-03	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	9.50E-02	N	1.14E-02	---	6.00E+01	**2E-04**	---	9.79E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	6.61E-03	---	8.00E+02	**8E-06**	---	5.67E-04	1.10E-05		**6E-09**
BENZENE	71-43-2	4.00E-01	Y	4.81E-02	---	3.00E+01	**2E-03**	---	4.12E-03	7.80E-06		**3E-08**
BENZYL CHLORIDE	100-44-7	1.30E-01	N	1.56E-02	---	1.00E+00	**2E-02**	---	1.34E-03	4.90E-05		**7E-08**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	1.56E-02	---	NA	---	---	1.34E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	7.00E-01	N	8.42E-02	---	5.00E+00	**2E-02**	---	7.21E-03	-		---
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	4.57E-02	---	1.00E+02	**5E-04**	---	3.92E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	2.90E-01	Y	3.49E-02	---	9.77E+01	**4E-04**	---	2.99E-03	2.30E-05		**7E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.10E-01	Y	2.53E-02	---	1.00E+03	**3E-05**	---	2.16E-03	2.50E-06		**5E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.90E-01	N	5.89E-02	---	NA	---	---	5.05E-03	2.20E-05		**1E-07**
ISOPROPYL ALCOHOL	67-63-0	3.10E+01	Y	3.73E+00	---	2.00E+02	**2E-02**	---	3.20E-01	-		---
M,P-XYLENE	108-38-3	6.80E-01	Y	8.18E-02	---	1.00E+02	**8E-04**	---	7.01E-03	-		---
METHYLENE CHLORIDE	75-09-2	7.20E-01	Y	8.66E-02	---	6.00E+02	**1E-04**	---	7.42E-03	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.50E-01	Y	3.01E-02	---	1.00E+02	**3E-04**	---	2.58E-03	-		---
TETRACHLOROETHENE	127-18-4	2.40E-01	Y	2.89E-02	---	4.00E+01	**7E-04**	---	2.47E-03	2.60E-07		**6E-10**
TRICHLOROETHENE	79-01-6	2.80E-02	Y	3.37E-03	---	2.00E+00	**2E-03**	---	2.89E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	4.60E-03	N	5.53E-04	---	8.00E+01	**7E-06**	---	4.74E-05	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0072H**	**Total Inhalation**	**1E-01**	**0E+00**	**8E-07**
		Based on NDs only	**9E-02**	**0E+00**	**6E-07**
		Based on Detects only	**3E-02**	**All ND**	**2E-07**
		Site-related only	**3E-03**	**0E+00**	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0072H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.20E-01	2.47E-02	1.48E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	2.80E-02	9.62E-04	5.77E-04	NA	NA	1.0E-06	kidney	1E-09	6E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	2.80E-02	2.89E-04		NA		3.1E-06	NHL+liver	9E-10		---		**9E-10**
VINYL CHLORIDE	75-01-4	4.60E-03	1.58E-04	9.48E-05	NA	NA	4.4E-06		7E-10	4E-10	---	---	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0076H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.25E-02	N	2.71E-03	---	NA	---	---	2.32E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	1.00E-01	N	1.20E-02	---	2.00E+00	**6E-03**	---	1.03E-03	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	2.50E-01	Y	3.01E-02	---	3.00E+01	**1E-03**	---	2.58E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.10E-02	N	2.53E-03	---	2.00E-01	**1E-02**	---	2.16E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	8.42E-02	---	2.00E+00	**4E-02**	---	7.21E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.70E+00	Y	2.04E-01	---	6.00E+01	**3E-03**	---	1.75E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	9.02E-03	---	9.00E+00	**1E-03**	---	7.73E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	1.20E-01	Y	1.44E-02	---	7.00E+00	**2E-03**	---	1.24E-03	2.60E-05		**3E-08**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	1.26E-02	---	4.00E+00	**3E-03**	---	1.08E-03	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	4.10E-01	Y	4.93E-02	---	6.00E+01	**8E-04**	---	4.23E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	N	1.02E-02	---	8.00E+02	**1E-05**	---	8.76E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	3.40E+00	Y	4.09E-01	---	3.00E+01	**1E-02**	---	3.50E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	2.50E-01	N	3.01E-02	---	1.00E+00	**3E-02**	---	2.58E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	2.55E-01	N	3.07E-02	---	NA	---	---	2.63E-03	3.70E-05		**1E-07**
BROMOMETHANE	74-83-9	8.50E-01	N	1.02E-01	---	5.00E+00	**2E-02**	---	8.76E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	5.53E-02	---	1.00E+02	**6E-04**	---	4.74E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	7.50E-01	Y	9.02E-02	---	9.77E+01	**9E-04**	---	7.73E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	4.90E+00	Y	5.89E-01	---	7.00E+01	**8E-03**	---	5.05E-02	-		---
ETHYLBENZENE	100-41-4	1.80E+00	Y	2.16E-01	---	1.00E+03	**2E-04**	---	1.86E-02	2.50E-06		**5E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	9.62E-02	---	NA	---	---	8.25E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	8.50E+00	Y	1.02E+00	---	2.00E+02	**5E-03**	---	8.76E-02	-		---
M,P-XYLENE	108-38-3	8.60E+00	Y	1.03E+00	---	1.00E+02	**1E-02**	---	8.86E-02	-		---
METHYLENE CHLORIDE	75-09-2	8.30E-01	Y	9.98E-02	---	6.00E+02	**2E-04**	---	8.55E-03	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	2.90E-02	N	3.49E-03	---	3.00E+00	**1E-03**	---	2.99E-04	3.40E-05		**1E-08**
O-XYLENE	95-47-6	2.20E+00	Y	2.65E-01	---	1.00E+02	**3E-03**	---	2.27E-02	-		---
TETRACHLOROETHENE	127-18-4	4.90E-02	Y	5.89E-03	---	4.00E+01	**1E-04**	---	5.05E-04	2.60E-07		**1E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	N	6.01E-03	---	2.00E+00	**3E-03**	---	5.15E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	7.00E-03	N	8.42E-04	---	8.00E+01	**1E-05**	---	7.21E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0076H**	**Total Inhalation**	**2E-01**	**0E+00**	**2E-06**
		Based on NDs only	**1E-01**	**0E+00**	**9E-07**
		Based on Detects only	**5E-02**	**All ND**	**6E-07**
		Site-related only	**4E-03**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0076H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.30E-01	2.85E-02	1.71E-02	NA	NA	1.0E-08		3E-10	2E-10	---	---	**5E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	1.72E-03	1.03E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	5.15E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	7.00E-03	2.40E-04	1.44E-04	NA	NA	4.4E-06		1E-09	6E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0091H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.20E-02	N	2.65E-03	---	NA	---	---	2.27E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	1.00E-01	N	1.20E-02	---	2.00E+00	**6E-03**	---	1.03E-03	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	2.80E-01	Y	3.37E-02	---	3.00E+01	**1E-03**	---	2.89E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.05E-02	N	2.46E-03	---	2.00E-01	**1E-02**	---	2.11E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	1.00E+00	N	1.20E-01	---	2.00E+00	**6E-02**	---	1.03E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.10E-01	Y	6.13E-02	---	6.00E+01	**1E-03**	---	5.26E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	8.42E-03	---	9.00E+00	**9E-04**	---	7.21E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	4.70E-01	Y	5.65E-02	---	7.00E+00	**8E-03**	---	4.84E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	1.10E-01	Y	1.32E-02	---	4.00E+00	**3E-03**	---	1.13E-03	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	1.25E-01	N	1.50E-02	---	6.00E+01	**3E-04**	---	1.29E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	1.30E-01	Y	1.56E-02	---	8.00E+02	**2E-05**	---	1.34E-03	1.10E-05		**1E-08**
BENZENE	71-43-2	8.30E-01	Y	9.98E-02	---	3.00E+01	**3E-03**	---	8.55E-03	7.80E-06		**7E-08**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	2.95E-02	---	1.00E+00	**3E-02**	---	2.53E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	6.80E-01	Y	8.18E-02	---	NA	---	---	7.01E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	9.62E-02	---	5.00E+00	**2E-02**	---	8.25E-03	-		---
CARBON TETRACHLORIDE	56-23-5	7.70E-01	Y	9.26E-02	---	1.00E+02	**9E-04**	---	7.94E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	3.80E+00	Y	4.57E-01	---	9.77E+01	**5E-03**	---	3.92E-02	2.30E-05		**9E-07**
ETHYL ACETATE	141-78-6	8.20E+00	Y	9.86E-01	---	7.00E+01	**1E-02**	---	8.45E-02	-		---
ETHYLBENZENE	100-41-4	6.60E-01	Y	7.94E-02	---	1.00E+03	**8E-05**	---	6.80E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	9.62E-02	---	NA	---	---	8.25E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	5.60E+01	Y	6.73E+00	---	2.00E+02	**3E-02**	---	5.77E-01	-		---
M,P-XYLENE	108-38-3	1.90E+00	Y	2.28E-01	---	1.00E+02	**2E-03**	---	1.96E-02	-		---
METHYLENE CHLORIDE	75-09-2	1.10E+00	Y	1.32E-01	---	6.00E+02	**2E-04**	---	1.13E-02	1.00E-08	M	**6E-10**
NAPHTHALENE	91-20-3	2.75E-02	N	3.31E-03	---	3.00E+00	**1E-03**	---	2.83E-04	3.40E-05		**1E-08**
O-XYLENE	95-47-6	7.20E-01	Y	8.66E-02	---	1.00E+02	**9E-04**	---	7.42E-03	-		---
TETRACHLOROETHENE	127-18-4	1.80E+01	Y	2.16E+00	---	4.00E+01	**5E-02**	---	1.86E-01	2.60E-07		**5E-08**
TRICHLOROETHENE	79-01-6	4.30E-01	Y	5.17E-02	---	2.00E+00	**3E-02**	---	4.43E-03	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	6.50E-03	N	7.82E-04	---	8.00E+01	**1E-05**	---	6.70E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0091H**	**Total Inhalation**	**3E-01**	**0E+00**	**2E-06**
		Based on NDs only	**1E-01**	**0E+00**	**8E-07**
		Based on Detects only	**2E-01**	**All ND**	**2E-06**
		Site-related only	**8E-02**	**0E+00**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0091H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.10E+00	3.78E-02	2.27E-02	NA	NA	1.0E-08		4E-10	2E-10	---	---	**6E-10**
TRICHLOROETHENE	79-01-6	4.30E-01	1.48E-02	8.86E-03	NA	NA	1.0E-06	kidney	1E-08	9E-09	---	---	**2E-08**
TRICHLOROETHENE	79-01-6	4.30E-01	4.43E-03		NA		3.1E-06	NHL+liver	1E-08		---		**1E-08**
VINYL CHLORIDE	75-01-4	6.50E-03	2.23E-04	1.34E-04	NA	NA	4.4E-06		1E-09	6E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0098H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	2.59E-03	---	NA	---	---	2.22E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	1.00E-01	N	1.20E-02	---	2.00E+00	**6E-03**	---	1.03E-03	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	1.80E-01	Y	2.16E-02	---	3.00E+01	**7E-04**	---	1.86E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	2.40E-03	---	2.00E-01	**1E-02**	---	2.06E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	7.82E-02	---	2.00E+00	**4E-02**	---	6.70E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.30E+00	Y	1.56E-01	---	6.00E+01	**3E-03**	---	1.34E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	8.42E-03	---	9.00E+00	**9E-04**	---	7.21E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	9.10E-02	Y	1.09E-02	---	7.00E+00	**2E-03**	---	9.38E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	1.20E-02	---	4.00E+00	**3E-03**	---	1.03E-03	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	3.30E-01	Y	3.97E-02	---	6.00E+01	**7E-04**	---	3.40E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	1.30E+00	Y	1.56E-01	---	8.00E+02	**2E-04**	---	1.34E-02	1.10E-05		**1E-07**
BENZENE	71-43-2	5.30E+00	Y	6.37E-01	---	3.00E+01	**2E-02**	---	5.46E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	2.95E-02	---	1.00E+00	**3E-02**	---	2.53E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	2.45E-01	N	2.95E-02	---	NA	---	---	2.53E-03	3.70E-05		**9E-08**
BROMOMETHANE	74-83-9	8.00E-01	N	9.62E-02	---	5.00E+00	**2E-02**	---	8.25E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	5.41E-02	---	1.00E+02	**5E-04**	---	4.64E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	4.60E-01	Y	5.53E-02	---	9.77E+01	**6E-04**	---	4.74E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	1.50E+00	Y	1.80E-01	---	7.00E+01	**3E-03**	---	1.55E-02	-		---
ETHYLBENZENE	100-41-4	3.00E+00	Y	3.61E-01	---	1.00E+03	**4E-04**	---	3.09E-02	2.50E-06		**8E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	9.62E-02	---	NA	---	---	8.25E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	5.40E+00	Y	6.49E-01	---	2.00E+02	**3E-03**	---	5.57E-02	-		---
M,P-XYLENE	108-38-3	1.30E+01	Y	1.56E+00	---	1.00E+02	**2E-02**	---	1.34E-01	-		---
METHYLENE CHLORIDE	75-09-2	4.55E-01	N	5.47E-02	---	6.00E+02	**9E-05**	---	4.69E-03	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	2.50E-02	N	3.01E-03	---	3.00E+00	**1E-03**	---	2.58E-04	3.40E-05		**9E-09**
O-XYLENE	95-47-6	3.50E+00	Y	4.21E-01	---	1.00E+02	**4E-03**	---	3.61E-02	-		---
TETRACHLOROETHENE	127-18-4	1.20E+00	Y	1.44E-01	---	4.00E+01	**4E-03**	---	1.24E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	7.80E-01	Y	9.38E-02	---	2.00E+00	**5E-02**	---	8.04E-03	4.10E-06	M	**7E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	6.50E-03	N	7.82E-04	---	8.00E+01	**1E-05**	---	6.70E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0098H**	**Total Inhalation**	**2E-01**	**0E+00**	**2E-06**
		Based on NDs only	**1E-01**	**0E+00**	**9E-07**
		Based on Detects only	**1E-01**	**All ND**	**9E-07**
		Site-related only	**5E-02**	**0E+00**	**8E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0098H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.55E-01	1.56E-02	9.38E-03	NA	NA	1.0E-08		2E-10	9E-11	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	7.80E-01	2.68E-02	1.61E-02	NA	NA	1.0E-06	kidney	3E-08	2E-08	---	---	**4E-08**
TRICHLOROETHENE	79-01-6	7.80E-01	8.04E-03		NA		3.1E-06	NHL+liver	2E-08		---		**2E-08**
VINYL CHLORIDE	75-01-4	6.50E-03	2.23E-04	1.34E-04	NA	NA	4.4E-06		1E-09	6E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0102H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.50E-02	N	1.80E-03	---	NA	---	---	1.55E-04	5.80E-05		**9E-09**
1,3-BUTADIENE	106-99-0	2.90E-02	N	3.49E-03	---	2.00E+00	**2E-03**	---	2.99E-04	3.00E-05		**9E-09**
1,4-DIOXANE	123-91-1	4.20E-01	Y	5.05E-02	---	3.00E+01	**2E-03**	---	4.33E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.50E-03	N	1.02E-03	---	2.00E-01	**5E-03**	---	8.76E-05	1.60E-05		**1E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	1.05E+00	N	1.26E-01	---	2.00E+00	**6E-02**	---	1.08E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	6.10E+00	Y	7.33E-01	---	6.00E+01	**1E-02**	---	6.29E-02	-		---
1,2-DIBROMOETHANE	106-93-4	8.50E-03	N	1.02E-03	---	9.00E+00	**1E-04**	---	8.76E-05	6.00E-04		**5E-08**
1,2-DICHLOROETHANE	107-06-2	9.00E-01	Y	1.08E-01	---	7.00E+00	**2E-02**	---	9.28E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	4.00E-02	N	4.81E-03	---	4.00E+00	**1E-03**	---	4.12E-04	3.70E-06		**2E-09**
1,3,5-Trimethylbenzene	108-67-8	1.70E+00	Y	2.04E-01	---	6.00E+01	**3E-03**	---	1.75E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.40E-02	N	5.29E-03	---	8.00E+02	**7E-06**	---	4.53E-04	1.10E-05		**5E-09**
BENZENE	71-43-2	2.50E+00	Y	3.01E-01	---	3.00E+01	**1E-02**	---	2.58E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	7.00E-02	N	8.42E-03	---	1.00E+00	**8E-03**	---	7.21E-04	4.90E-05		**4E-08**
BROMODICHLOROMETHANE	75-27-4	3.00E-01	Y	3.61E-02	---	NA	---	---	3.09E-03	3.70E-05		**1E-07**
BROMOMETHANE	74-83-9	1.95E-01	N	2.34E-02	---	5.00E+00	**5E-03**	---	2.01E-03	-		---
CARBON TETRACHLORIDE	56-23-5	1.20E+00	Y	1.44E-01	---	1.00E+02	**1E-03**	---	1.24E-02	6.00E-06		**7E-08**
CHLOROFORM	67-66-3	1.40E+00	Y	1.68E-01	---	9.77E+01	**2E-03**	---	1.44E-02	2.30E-05		**3E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	3.60E+00	Y	4.33E-01	---	1.00E+03	**4E-04**	---	3.71E-02	2.50E-06		**9E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	1.02E-01	---	NA	---	---	8.76E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	1.20E+02	Y	1.44E+01	---	2.00E+02	**7E-02**	---	1.24E+00	-		---
M,P-XYLENE	108-38-3	1.80E+01	Y	2.16E+00	---	1.00E+02	**2E-02**	---	1.86E-01	-		---
METHYLENE CHLORIDE	75-09-2	4.80E-01	N	5.77E-02	---	6.00E+02	**1E-04**	---	4.95E-03	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	6.20E+00	Y	7.46E-01	---	1.00E+02	**7E-03**	---	6.39E-02	-		---
TETRACHLOROETHENE	127-18-4	4.70E-01	Y	5.65E-02	---	4.00E+01	**1E-03**	---	4.84E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.00E-02	Y	2.40E-03	---	2.00E+00	**1E-03**	---	2.06E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	2.75E-03	N	3.31E-04	---	8.00E+01	**4E-06**	---	2.83E-05	4.40E-06	M	**7E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0102H**	**Total Inhalation**	**2E-01**	**0E+00**	**1E-06**
		Based on NDs only	**8E-02**	**0E+00**	**3E-07**
		Based on Detects only	**2E-01**	**All ND**	**1E-06**
		Site-related only	**4E-03**	**0E+00**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0102H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.80E-01	1.65E-02	9.89E-03	NA	NA	1.0E-08		2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	2.00E-02	6.87E-04	4.12E-04	NA	NA	1.0E-06	kidney	7E-10	4E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	2.00E-02	2.06E-04		NA		3.1E-06	NHL+liver	6E-10		---		**6E-10**
VINYL CHLORIDE	75-01-4	2.75E-03	9.45E-05	5.67E-05	NA	NA	4.4E-06		4E-10	2E-10	---	---	**7E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0118H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00E-01	N	1.20E-02	---	NA	---	---	1.03E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	4.50E-01	N	5.41E-02	---	2.00E+00	**3E-02**	---	4.64E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	1.20E-01	Y	1.44E-02	---	3.00E+01	**5E-04**	---	1.24E-03	5.00E-06		**6E-09**
1,1,2-TRICHLOROETHANE	79-00-5	9.50E-02	N	1.14E-02	---	2.00E-01	**6E-02**	---	9.79E-04	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	3.05E+00	N	3.67E-01	---	2.00E+00	**2E-01**	---	3.14E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.70E-01	Y	5.65E-02	---	6.00E+01	**9E-04**	---	4.84E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.30E-01	N	3.97E-02	---	9.00E+00	**4E-03**	---	3.40E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	7.80E-02	Y	9.38E-03	---	7.00E+00	**1E-03**	---	8.04E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	4.70E-01	N	5.65E-02	---	4.00E+00	**1E-02**	---	4.84E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	5.50E-01	N	6.61E-02	---	6.00E+01	**1E-03**	---	5.67E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	3.70E-01	N	4.45E-02	---	8.00E+02	**6E-05**	---	3.81E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	7.30E-01	Y	8.78E-02	---	3.00E+01	**3E-03**	---	7.52E-03	7.80E-06		**6E-08**
BENZYL CHLORIDE	100-44-7	1.10E+00	N	1.32E-01	---	1.00E+00	**1E-01**	---	1.13E-02	4.90E-05		**6E-07**
BROMODICHLOROMETHANE	75-27-4	1.15E+00	N	1.38E-01	---	NA	**---**	---	1.19E-02	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	3.75E+00	N	4.51E-01	---	5.00E+00	**9E-02**	---	3.86E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	5.41E-02	---	1.00E+02	**5E-04**	---	4.64E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	2.20E+00	Y	2.65E-01	---	9.77E+01	**3E-03**	---	2.27E-02	2.30E-05		**5E-07**
ETHYL ACETATE	141-78-6	9.00E+00	Y	1.08E+00	---	7.00E+01	**2E-02**	---	9.28E-02	-		**---**
ETHYLBENZENE	100-41-4	3.90E-01	Y	4.69E-02	---	1.00E+03	**5E-05**	---	4.02E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.70E+00	N	4.45E-01	---	NA	**---**	---	3.81E-02	2.20E-05		**8E-07**
ISOPROPYL ALCOHOL	67-63-0	1.40E+01	Y	1.68E+00	---	2.00E+02	**8E-03**	---	1.44E-01	-		**---**
M,P-XYLENE	108-38-3	1.70E+00	Y	2.04E-01	---	1.00E+02	**2E-03**	---	1.75E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	5.00E+02	Y	6.01E+01	---	6.00E+02	**1E-01**	---	5.15E+00	1.00E-08	M	**3E-07**
NAPHTHALENE	91-20-3	2.75E-02	N	3.31E-03	---	3.00E+00	**1E-03**	---	2.83E-04	3.40E-05		**1E-08**
O-XYLENE	95-47-6	5.40E-01	Y	6.49E-02	---	1.00E+02	**6E-04**	---	5.57E-03	-		**---**
TETRACHLOROETHENE	127-18-4	4.90E+00	Y	5.89E-01	---	4.00E+01	**1E-02**	---	5.05E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	3.10E-02	Y	3.73E-03	---	2.00E+00	**2E-03**	---	3.20E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		**---**
VINYL CHLORIDE	75-01-4	3.00E-02	N	3.61E-03	---	8.00E+01	**5E-05**	---	3.09E-04	4.40E-06	M	**7E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0118H**	**Total Inhalation**	**7E-01**	**0E+00**	**5E-06**
		Based on NDs only	**5E-01**	**0E+00**	**4E-06**
		Based on Detects only	**2E-01**	**All ND**	**9E-07**
		Site-related only	**2E-02**	**0E+00**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0118H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.00E+02	1.72E+01	1.03E+01	NA	NA	1.0E-08		2E-07	1E-07	---	---	**3E-07**
TRICHLOROETHENE	79-01-6	3.10E-02	1.07E-03	6.39E-04	NA	NA	1.0E-06	kidney	1E-09	6E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	3.10E-02	3.20E-04		NA		3.1E-06	NHL+liver	1E-09		---		**1E-09**
VINYL CHLORIDE	75-01-4	3.00E-02	1.03E-03	6.18E-04	NA	NA	4.4E-06		5E-09	3E-09	---	---	**7E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0121H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.90E-02	N	3.49E-03	---	NA	---	---	2.99E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	9.00E-02	N	1.08E-02	---	2.00E+00	**5E-03**	---	9.28E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	2.00E-01	Y	2.40E-02	---	3.00E+01	**8E-04**	---	2.06E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.90E-02	N	2.28E-03	---	2.00E-01	**1E-02**	---	1.96E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	8.42E-02	---	2.00E+00	**4E-02**	---	7.21E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.35E-01	N	1.62E-02	---	6.00E+01	**3E-04**	---	1.39E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	8.42E-03	---	9.00E+00	**9E-04**	---	7.21E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	1.00E-01	Y	1.20E-02	---	7.00E+00	**2E-03**	---	1.03E-03	2.60E-05		**3E-08**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	1.14E-02	---	4.00E+00	**3E-03**	---	9.79E-04	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	1.38E-02	---	6.00E+01	**2E-04**	---	1.19E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	6.10E-02	Y	7.33E-03	---	8.00E+02	**9E-06**	---	6.29E-04	1.10E-05		**7E-09**
BENZENE	71-43-2	7.30E-01	Y	8.78E-02	---	3.00E+01	**3E-03**	---	7.52E-03	7.80E-06		**6E-08**
BENZYL CHLORIDE	100-44-7	2.30E-01	N	2.77E-02	---	1.00E+00	**3E-02**	---	2.37E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	2.40E-01	Y	2.89E-02	---	NA	---	---	2.47E-03	3.70E-05		**9E-08**
BROMOMETHANE	74-83-9	7.50E-01	N	9.02E-02	---	5.00E+00	**2E-02**	---	7.73E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	5.41E-02	---	1.00E+02	**5E-04**	---	4.64E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	9.80E-01	Y	1.18E-01	---	9.77E+01	**1E-03**	---	1.01E-02	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	2.10E+00	Y	2.53E-01	---	7.00E+01	**4E-03**	---	2.16E-02	-		---
ETHYLBENZENE	100-41-4	3.20E-01	Y	3.85E-02	---	1.00E+03	**4E-05**	---	3.30E-03	2.50E-06		**8E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	9.02E-02	---	NA	---	---	7.73E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	5.90E+01	Y	7.09E+00	---	2.00E+02	**4E-02**	---	6.08E-01	-		---
M,P-XYLENE	108-38-3	1.30E+00	Y	1.56E-01	---	1.00E+02	**2E-03**	---	1.34E-02	-		---
METHYLENE CHLORIDE	75-09-2	5.50E-01	N	6.61E-02	---	6.00E+02	**1E-04**	---	5.67E-03	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	1.50E-01	Y	1.80E-02	---	3.00E+00	**6E-03**	---	1.55E-03	3.40E-05		**5E-08**
O-XYLENE	95-47-6	3.90E-01	Y	4.69E-02	---	1.00E+02	**5E-04**	---	4.02E-03	-		---
TETRACHLOROETHENE	127-18-4	3.90E+00	Y	4.69E-01	---	4.00E+01	**1E-02**	---	4.02E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	5.90E-02	Y	7.09E-03	---	2.00E+00	**4E-03**	---	6.08E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	5.30E-02	Y	6.37E-03	---	8.00E+01	**8E-05**	---	5.46E-04	4.40E-06	M	**1E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0121H**	**Total Inhalation**	**2E-01**	**0E+00**	**1E-06**
		Based on NDs only	**1E-01**	**0E+00**	**8E-07**
		Based on Detects only	**7E-02**	**All ND**	**5E-07**
		Site-related only	**2E-02**	**0E+00**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0121H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.50E-01	1.89E-02	1.13E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	5.90E-02	2.03E-03	1.22E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	5.90E-02	6.08E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	5.30E-02	1.82E-03	1.09E-03	NA	NA	4.4E-06		8E-09	5E-09	---	---	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0122H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00E-02	N	2.40E-03	---	NA	---	---	2.06E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	2.30E-01	Y	2.77E-02	---	2.00E+00	**1E-02**	---	2.37E-03	3.00E-05		**7E-08**
1,4-DIOXANE	123-91-1	1.70E-01	Y	2.04E-02	---	3.00E+01	**7E-04**	---	1.75E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.90E-02	N	2.28E-03	---	2.00E-01	**1E-02**	---	1.96E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	7.21E-02	---	2.00E+00	**4E-02**	---	6.18E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	6.20E-01	Y	7.46E-02	---	6.00E+01	**1E-03**	---	6.39E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.50E-02	N	7.82E-03	---	9.00E+00	**9E-04**	---	6.70E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	8.60E-02	Y	1.03E-02	---	7.00E+00	**1E-03**	---	8.86E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	1.14E-02	---	4.00E+00	**3E-03**	---	9.79E-04	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	1.38E-02	---	6.00E+01	**2E-04**	---	1.19E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	7.20E-02	Y	8.66E-03	---	8.00E+02	**1E-05**	---	7.42E-04	1.10E-05		**8E-09**
BENZENE	71-43-2	5.80E-01	Y	6.97E-02	---	3.00E+01	**2E-03**	---	5.98E-03	7.80E-06		**5E-08**
BENZYL CHLORIDE	100-44-7	2.25E-01	N	2.71E-02	---	1.00E+00	**3E-02**	---	2.32E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	2.30E-01	N	2.77E-02	---	NA	---	---	2.37E-03	3.70E-05		**9E-08**
BROMOMETHANE	74-83-9	7.50E-01	N	9.02E-02	---	5.00E+00	**2E-02**	---	7.73E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	5.77E-02	---	1.00E+02	**6E-04**	---	4.95E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	7.40E-01	Y	8.90E-02	---	9.77E+01	**9E-04**	---	7.63E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	6.30E+00	Y	7.58E-01	---	7.00E+01	**1E-02**	---	6.49E-02	-		---
ETHYLBENZENE	100-41-4	2.30E-01	Y	2.77E-02	---	1.00E+03	**3E-05**	---	2.37E-03	2.50E-06		**6E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	9.02E-02	---	NA	---	---	7.73E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	2.10E+01	Y	2.53E+00	---	2.00E+02	**1E-02**	---	2.16E-01	-		---
M,P-XYLENE	108-38-3	8.10E-01	Y	9.74E-02	---	1.00E+02	**1E-03**	---	8.35E-03	-		---
METHYLENE CHLORIDE	75-09-2	7.00E-01	Y	8.42E-02	---	6.00E+02	**1E-04**	---	7.21E-03	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	2.80E-02	N	3.37E-03	---	3.00E+00	**1E-03**	---	2.89E-04	3.40E-05		**1E-08**
O-XYLENE	95-47-6	3.10E-01	Y	3.73E-02	---	1.00E+02	**4E-04**	---	3.20E-03	-		---
TETRACHLOROETHENE	127-18-4	4.80E+00	Y	5.77E-01	---	4.00E+01	**1E-02**	---	4.95E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	2.20E-02	Y	2.65E-03	---	2.00E+00	**1E-03**	---	2.27E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	6.00E-03	N	7.21E-04	---	8.00E+01	**9E-06**	---	6.18E-05	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0122H**	**Total Inhalation**	**2E-01**	**0E+00**	**1E-06**
		Based on NDs only	**1E-01**	**0E+00**	**8E-07**
		Based on Detects only	**6E-02**	**All ND**	**4E-07**
		Site-related only	**2E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0122H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.00E-01	2.40E-02	1.44E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	2.20E-02	7.56E-04	4.53E-04	NA	NA	1.0E-06	kidney	8E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	2.20E-02	2.27E-04		NA		3.1E-06	NHL+liver	7E-10		---		**7E-10**
VINYL CHLORIDE	75-01-4	6.00E-03	2.06E-04	1.24E-04	NA	NA	4.4E-06		9E-10	5E-10	---	---	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0133H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	2.59E-03	---	NA	**---**	**---**	2.22E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	9.50E-02	N	1.14E-02	---	2.00E+00	**6E-03**	**---**	9.79E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	1.50E-01	Y	1.80E-02	---	3.00E+01	**6E-04**	**---**	1.55E-03	5.00E-06		**8E-09**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	2.40E-03	---	2.00E-01	**1E-02**	**---**	2.06E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	7.82E-02	---	2.00E+00	**4E-02**	**---**	6.70E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.00E-01	Y	6.01E-02	---	6.00E+01	**1E-03**	**---**	5.15E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	8.42E-03	---	9.00E+00	**9E-04**	**---**	7.21E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	2.50E-01	Y	3.01E-02	---	7.00E+00	**4E-03**	**---**	2.58E-03	2.60E-05		**7E-08**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	1.20E-02	---	4.00E+00	**3E-03**	**---**	1.03E-03	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	1.25E-01	N	1.50E-02	---	6.00E+01	**3E-04**	**---**	1.29E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	2.80E-02	Y	3.37E-03	---	8.00E+02	**4E-06**	**---**	2.89E-04	1.10E-05		**3E-09**
BENZENE	71-43-2	9.70E-01	Y	1.17E-01	---	3.00E+01	**4E-03**	**---**	1.00E-02	7.80E-06		**8E-08**
BENZYL CHLORIDE	100-44-7	2.40E-01	N	2.89E-02	---	1.00E+00	**3E-02**	**---**	2.47E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	1.10E+00	Y	1.32E-01	---	NA	**---**	**---**	1.13E-02	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	9.62E-02	---	5.00E+00	**2E-02**	**---**	8.25E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	5.77E-02	---	1.00E+02	**6E-04**	**---**	4.95E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	4.70E+00	Y	5.65E-01	---	9.77E+01	**6E-03**	**---**	4.84E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	7.20E+00	Y	8.66E-01	---	7.00E+01	**1E-02**	**---**	7.42E-02	-		**---**
ETHYLBENZENE	100-41-4	3.50E-01	Y	4.21E-02	---	1.00E+03	**4E-05**	**---**	3.61E-03	2.50E-06		**9E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	9.62E-02	---	NA	**---**	**---**	8.25E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	2.50E+01	Y	3.01E+00	---	2.00E+02	**2E-02**	**---**	2.58E-01	-		**---**
M,P-XYLENE	108-38-3	1.10E+00	Y	1.32E-01	---	1.00E+02	**1E-03**	**---**	1.13E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	8.40E-01	Y	1.01E-01	---	6.00E+02	**2E-04**	**---**	8.66E-03	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	2.65E-02	N	3.19E-03	---	3.00E+00	**1E-03**	**---**	2.73E-04	3.40E-05		**9E-09**
O-XYLENE	95-47-6	4.80E-01	Y	5.77E-02	---	1.00E+02	**6E-04**	**---**	4.95E-03	-		**---**
TETRACHLOROETHENE	127-18-4	3.90E-01	Y	4.69E-02	---	4.00E+01	**1E-03**	**---**	4.02E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.40E-02	Y	2.89E-03	---	2.00E+00	**1E-03**	**---**	2.47E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-03	N	7.82E-04	---	8.00E+01	**1E-05**	**---**	6.70E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0133H**	**Total Inhalation**	**2E-01**	**0E+00**	**3E-06**
		Based on NDs only	**1E-01**	**0E+00**	**8E-07**
		Based on Detects only	**5E-02**	**All ND**	**2E-06**
		Site-related only	**3E-03**	**0E+00**	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0133H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.40E-01	2.89E-02	1.73E-02	NA	NA	1.0E-08		3E-10	2E-10	---	---	**5E-10**
TRICHLOROETHENE	79-01-6	2.40E-02	8.25E-04	4.95E-04	NA	NA	1.0E-06	kidney	8E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	2.40E-02	2.47E-04		NA		3.1E-06	NHL+liver	8E-10		---		**8E-10**
VINYL CHLORIDE	75-01-4	6.50E-03	2.23E-04	1.34E-04	NA	NA	4.4E-06		1E-09	6E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0135H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	4.05E-02	N	4.87E-03	---	NA	---	---	4.17E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	1.80E-01	N	2.16E-02	---	2.00E+00	**1E-02**	---	1.86E-03	3.00E-05		**6E-08**
1,4-DIOXANE	123-91-1	1.10E-01	N	1.32E-02	---	3.00E+01	**4E-04**	---	1.13E-03	5.00E-06		**6E-09**
1,1,2-TRICHLOROETHANE	79-00-5	3.75E-02	N	4.51E-03	---	2.00E-01	**2E-02**	---	3.86E-04	1.60E-05		**6E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	1.20E+00	N	1.44E-01	---	2.00E+00	**7E-02**	---	1.24E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.60E-01	Y	9.14E-02	---	6.00E+01	**2E-03**	---	7.83E-03	-		---
1,2-DIBROMOETHANE	106-93-4	1.35E-01	N	1.62E-02	---	9.00E+00	**2E-03**	---	1.39E-03	6.00E-04		**8E-07**
1,2-DICHLOROETHANE	107-06-2	1.60E-01	Y	1.92E-02	---	7.00E+00	**3E-03**	---	1.65E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	1.90E-01	N	2.28E-02	---	4.00E+00	**6E-03**	---	1.96E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	2.30E-01	N	2.77E-02	---	6.00E+01	**5E-04**	---	2.37E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	3.00E-02	Y	3.61E-03	---	8.00E+02	**5E-06**	---	3.09E-04	1.10E-05		**3E-09**
BENZENE	71-43-2	7.10E-01	Y	8.54E-02	---	3.00E+01	**3E-03**	---	7.32E-03	7.80E-06		**6E-08**
BENZYL CHLORIDE	100-44-7	4.50E-01	N	5.41E-02	---	1.00E+00	**5E-02**	---	4.64E-03	4.90E-05		**2E-07**
BROMODICHLOROMETHANE	75-27-4	4.60E-01	N	5.53E-02	---	NA	---	---	4.74E-03	3.70E-05		**2E-07**
BROMOMETHANE	74-83-9	1.50E+00	N	1.80E-01	---	5.00E+00	**4E-02**	---	1.55E-02	-		---
CARBON TETRACHLORIDE	56-23-5	5.00E-01	Y	6.01E-02	---	1.00E+02	**6E-04**	---	5.15E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.70E+00	Y	2.04E-01	---	9.77E+01	**2E-03**	---	1.75E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	1.80E+01	Y	2.16E+00	---	7.00E+01	**3E-02**	---	1.86E-01	-		---
ETHYLBENZENE	100-41-4	1.20E+01	Y	1.44E+00	---	1.00E+03	**1E-03**	---	1.24E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.50E+00	N	1.80E-01	---	NA	---	---	1.55E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	1.40E+01	Y	1.68E+00	---	2.00E+02	**8E-03**	---	1.44E-01	-		---
M,P-XYLENE	108-38-3	4.10E+01	Y	4.93E+00	---	1.00E+02	**5E-02**	---	4.23E-01	-		---
METHYLENE CHLORIDE	75-09-2	6.00E-01	N	7.21E-02	---	6.00E+02	**1E-04**	---	6.18E-03	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	1.60E-01	Y	1.92E-02	---	3.00E+00	**6E-03**	---	1.65E-03	3.40E-05		**6E-08**
O-XYLENE	95-47-6	1.20E+01	Y	1.44E+00	---	1.00E+02	**1E-02**	---	1.24E-01	-		---
TETRACHLOROETHENE	127-18-4	4.50E-01	Y	5.41E-02	---	4.00E+01	**1E-03**	---	4.64E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	5.50E-02	N	6.61E-03	---	2.00E+00	**3E-03**	---	5.67E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	1.20E-02	N	1.44E-03	---	8.00E+01	**2E-05**	---	1.24E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0135H**	**Total Inhalation**	**3E-01**	**0E+00**	**3E-06**
		Based on NDs only	**2E-01**	**0E+00**	**2E-06**
		Based on Detects only	**1E-01**	**All ND**	**9E-07**
		Site-related only	**5E-03**	**0E+00**	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0135H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.00E-01	2.06E-02	1.24E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	5.50E-02	1.89E-03	1.13E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	5.50E-02	5.67E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	1.20E-02	4.12E-04	2.47E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0137H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	2.59E-03	---	NA	---	---	2.22E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	9.50E-02	N	1.14E-02	---	2.00E+00	**6E-03**	---	9.79E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	1.80E-01	Y	2.16E-02	---	3.00E+01	**7E-04**	---	1.86E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	2.40E-03	---	2.00E-01	**1E-02**	---	2.06E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	7.82E-02	---	2.00E+00	**4E-02**	---	6.70E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.10E+00	Y	1.32E-01	---	6.00E+01	**2E-03**	---	1.13E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	8.42E-03	---	9.00E+00	**9E-04**	---	7.21E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	9.30E-02	Y	1.12E-02	---	7.00E+00	**2E-03**	---	9.59E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	1.20E-02	---	4.00E+00	**3E-03**	---	1.03E-03	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	2.50E-01	Y	3.01E-02	---	6.00E+01	**5E-04**	---	2.58E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	9.62E-03	---	8.00E+02	**1E-05**	---	8.25E-04	1.10E-05		**9E-09**
BENZENE	71-43-2	3.30E+00	Y	3.97E-01	---	3.00E+01	**1E-02**	---	3.40E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	2.40E-01	N	2.89E-02	---	1.00E+00	**3E-02**	---	2.47E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	2.45E-01	N	2.95E-02	---	NA	---	---	2.53E-03	3.70E-05		**9E-08**
BROMOMETHANE	74-83-9	8.00E-01	N	9.62E-02	---	5.00E+00	**2E-02**	---	8.25E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	5.77E-02	---	1.00E+02	**6E-04**	---	4.95E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.50E+00	Y	1.80E-01	---	9.77E+01	**2E-03**	---	1.55E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	5.20E+00	Y	6.25E-01	---	7.00E+01	**9E-03**	---	5.36E-02	-		---
ETHYLBENZENE	100-41-4	1.80E+00	Y	2.16E-01	---	1.00E+03	**2E-04**	---	1.86E-02	2.50E-06		**5E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	9.62E-02	---	NA	---	---	8.25E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	4.80E+00	Y	5.77E-01	---	2.00E+02	**3E-03**	---	4.95E-02	-		---
M,P-XYLENE	108-38-3	8.80E+00	Y	1.06E+00	---	1.00E+02	**1E-02**	---	9.07E-02	-		---
METHYLENE CHLORIDE	75-09-2	9.40E-01	Y	1.13E-01	---	6.00E+02	**2E-04**	---	9.69E-03	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	2.80E-02	N	3.37E-03	---	3.00E+00	**1E-03**	---	2.89E-04	3.40E-05		**1E-08**
O-XYLENE	95-47-6	2.30E+00	Y	2.77E-01	---	1.00E+02	**3E-03**	---	2.37E-02	-		---
TETRACHLOROETHENE	127-18-4	1.20E+00	Y	1.44E-01	---	4.00E+01	**4E-03**	---	1.24E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	1.30E-01	Y	1.56E-02	---	2.00E+00	**8E-03**	---	1.34E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	1.30E-02	Y	1.56E-03	---	8.00E+01	**2E-05**	---	1.34E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0137H**	**Total Inhalation**	**2E-01**	**0E+00**	**2E-06**
		Based on NDs only	**1E-01**	**0E+00**	**9E-07**
		Based on Detects only	**6E-02**	**All ND**	**7E-07**
		Site-related only	**1E-02**	**0E+00**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0137H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.40E-01	3.23E-02	1.94E-02	NA	NA	1.0E-08		3E-10	2E-10	---	---	**5E-10**
TRICHLOROETHENE	79-01-6	1.30E-01	4.47E-03	2.68E-03	NA	NA	1.0E-06	kidney	4E-09	3E-09	---	---	**7E-09**
TRICHLOROETHENE	79-01-6	1.30E-01	1.34E-03		NA		3.1E-06	NHL+liver	4E-09		---		**4E-09**
VINYL CHLORIDE	75-01-4	1.30E-02	4.47E-04	2.68E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0139H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.30E-02	N	2.77E-03	---	NA	---	---	2.37E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	1.30E+00	Y	1.56E-01	---	2.00E+00	**8E-02**	---	1.34E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	2.20E-01	Y	2.65E-02	---	3.00E+01	**9E-04**	---	2.27E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.15E-02	N	2.59E-03	---	2.00E-01	**1E-02**	---	2.22E-04	1.60E-05		**4E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	8.42E-02	---	2.00E+00	**4E-02**	---	7.21E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.40E-01	Y	5.29E-02	---	6.00E+01	**9E-04**	---	4.53E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	9.02E-03	---	9.00E+00	**1E-03**	---	7.73E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	4.90E-01	Y	5.89E-02	---	7.00E+00	**8E-03**	---	5.05E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	1.10E-01	N	1.32E-02	---	4.00E+00	**3E-03**	---	1.13E-03	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	1.56E-02	---	6.00E+01	**3E-04**	---	1.34E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	5.60E+01	Y	6.73E+00	---	8.00E+02	**8E-03**	---	5.77E-01	1.10E-05		**6E-06**
BENZENE	71-43-2	1.90E+00	Y	2.28E-01	---	3.00E+01	**8E-03**	---	1.96E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	2.60E-01	N	3.13E-02	---	1.00E+00	**3E-02**	---	2.68E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	2.60E-01	N	3.13E-02	---	NA	---	---	2.68E-03	3.70E-05		**1E-07**
BROMOMETHANE	74-83-9	1.90E+00	Y	2.28E-01	---	5.00E+00	**5E-02**	---	1.96E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	5.29E-02	---	1.00E+02	**5E-04**	---	4.53E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.00E+00	Y	1.20E-01	---	9.77E+01	**1E-03**	---	1.03E-02	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	1.10E+01	Y	1.32E+00	---	7.00E+01	**2E-02**	---	1.13E-01	-		---
ETHYLBENZENE	100-41-4	5.30E-01	Y	6.37E-02	---	1.00E+03	**6E-05**	---	5.46E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	1.02E-01	---	NA	---	---	8.76E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	3.60E+02	Y	4.33E+01	---	2.00E+02	**2E-01**	---	3.71E+00	-		---
M,P-XYLENE	108-38-3	1.70E+00	Y	2.04E-01	---	1.00E+02	**2E-03**	---	1.75E-02	-		---
METHYLENE CHLORIDE	75-09-2	3.45E-01	N	4.15E-02	---	6.00E+02	**7E-05**	---	3.56E-03	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	3.05E-02	N	3.67E-03	---	3.00E+00	**1E-03**	---	3.14E-04	3.40E-05		**1E-08**
O-XYLENE	95-47-6	4.40E-01	Y	5.29E-02	---	1.00E+02	**5E-04**	---	4.53E-03	-		---
TETRACHLOROETHENE	127-18-4	1.50E-01	Y	1.80E-02	---	4.00E+01	**5E-04**	---	1.55E-03	2.60E-07		**4E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	N	6.01E-03	---	2.00E+00	**3E-03**	---	5.15E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	7.00E-03	N	8.42E-04	---	8.00E+01	**1E-05**	---	7.21E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0139H**	**Total Inhalation**	**5E-01**	**0E+00**	**8E-06**
		Based on NDs only	**1E-01**	**0E+00**	**9E-07**
		Based on Detects only	**4E-01**	**All ND**	**7E-06**
		Site-related only	**4E-03**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0139H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.45E-01	1.19E-02	7.11E-03	NA	NA	1.0E-08		1E-10	7E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	1.72E-03	1.03E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	5.15E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	7.00E-03	2.40E-04	1.44E-04	NA	NA	4.4E-06		1E-09	6E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0145H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	1.32E-03	---	NA	---	---	1.13E-04	5.80E-05		**7E-09**
1,3-BUTADIENE	106-99-0	5.00E-02	N	6.01E-03	---	2.00E+00	**3E-03**	---	5.15E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	7.50E-02	N	9.02E-03	---	3.00E+01	**3E-04**	---	7.73E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	8.42E-04	---	2.00E-01	**4E-03**	---	7.21E-05	1.60E-05		**1E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.90E-01	N	5.89E-02	---	2.00E+00	**3E-02**	---	5.05E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.50E-01	Y	1.80E-02	---	6.00E+01	**3E-04**	---	1.55E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.35E-02	N	4.03E-03	---	9.00E+00	**4E-04**	---	3.45E-04	6.00E-04		**2E-07**
1,2-DICHLOROETHANE	107-06-2	8.30E-02	Y	9.98E-03	---	7.00E+00	**1E-03**	---	8.55E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	1.14E-02	---	4.00E+00	**3E-03**	---	9.79E-04	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	7.21E-03	---	6.00E+01	**1E-04**	---	6.18E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	2.80E+00	Y	3.37E-01	---	8.00E+02	**4E-04**	---	2.89E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	4.10E-01	Y	4.93E-02	---	3.00E+01	**2E-03**	---	4.23E-03	7.80E-06		**3E-08**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	1.02E-02	---	1.00E+00	**1E-02**	---	8.76E-04	4.90E-05		**4E-08**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	1.56E-02	---	NA	---	---	1.34E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	6.50E-01	N	7.82E-02	---	5.00E+00	**2E-02**	---	6.70E-03	-		---
CARBON TETRACHLORIDE	56-23-5	7.60E-01	Y	9.14E-02	---	1.00E+02	**9E-04**	---	7.83E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	3.90E-01	Y	4.69E-02	---	9.77E+01	**5E-04**	---	4.02E-03	2.30E-05		**9E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.30E-01	Y	1.56E-02	---	1.00E+03	**2E-05**	---	1.34E-03	2.50E-06		**3E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	7.82E-02	---	NA	---	---	6.70E-03	2.20E-05		**1E-07**
ISOPROPYL ALCOHOL	67-63-0	1.50E+01	Y	1.80E+00	---	2.00E+02	**9E-03**	---	1.55E-01	-		---
M,P-XYLENE	108-38-3	4.10E-01	Y	4.93E-02	---	1.00E+02	**5E-04**	---	4.23E-03	-		---
METHYLENE CHLORIDE	75-09-2	4.30E+00	Y	5.17E-01	---	6.00E+02	**9E-04**	---	4.43E-02	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.50E-01	Y	1.80E-02	---	1.00E+02	**2E-04**	---	1.55E-03	-		---
TETRACHLOROETHENE	127-18-4	4.70E+00	Y	5.65E-01	---	4.00E+01	**1E-02**	---	4.84E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	4.50E-02	Y	5.41E-03	---	2.00E+00	**3E-03**	---	4.64E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.00E-03	N	9.62E-04	---	8.00E+01	**1E-05**	---	8.25E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0145H**	**Total Inhalation**	**1E-01**	**0E+00**	**1E-06**
		Based on NDs only	**7E-02**	**0E+00**	**5E-07**
		Based on Detects only	**3E-02**	**All ND**	**5E-07**
		Site-related only	**2E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0145H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.30E+00	1.48E-01	8.86E-02	NA	NA	1.0E-08		1E-09	9E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	4.50E-02	1.55E-03	9.28E-04	NA	NA	1.0E-06	kidney	2E-09	9E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	4.50E-02	4.64E-04		NA		3.1E-06	NHL+liver	1E-09		---		**1E-09**
VINYL CHLORIDE	75-01-4	8.00E-03	2.75E-04	1.65E-04	NA	NA	4.4E-06		1E-09	7E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0146H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.25E-02	N	2.71E-03	---	NA	---	---	2.32E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	1.00E-01	N	1.20E-02	---	2.00E+00	**6E-03**	---	1.03E-03	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	2.30E-01	Y	2.77E-02	---	3.00E+01	**9E-04**	---	2.37E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.10E-02	N	2.53E-03	---	2.00E-01	**1E-02**	---	2.16E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	1.00E+00	N	1.20E-01	---	2.00E+00	**6E-02**	---	1.03E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.45E-01	N	1.74E-02	---	6.00E+01	**3E-04**	---	1.49E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	9.02E-03	---	9.00E+00	**1E-03**	---	7.73E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	1.68E-02	---	7.00E+00	**2E-03**	---	1.44E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	1.90E-01	N	2.28E-02	---	4.00E+00	**6E-03**	---	1.96E-03	3.70E-06		**7E-09**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	1.56E-02	---	6.00E+01	**3E-04**	---	1.34E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	1.05E-01	N	1.26E-02	---	8.00E+02	**2E-05**	---	1.08E-03	1.10E-05		**1E-08**
BENZENE	71-43-2	6.80E-01	Y	8.18E-02	---	3.00E+01	**3E-03**	---	7.01E-03	7.80E-06		**5E-08**
BENZYL CHLORIDE	100-44-7	2.50E-01	N	3.01E-02	---	1.00E+00	**3E-02**	---	2.58E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	2.60E-01	N	3.13E-02	---	NA	---	---	2.68E-03	3.70E-05		**1E-07**
BROMOMETHANE	74-83-9	1.35E+00	N	1.62E-01	---	5.00E+00	**3E-02**	---	1.39E-02	-		---
CARBON TETRACHLORIDE	56-23-5	6.40E-01	Y	7.70E-02	---	1.00E+02	**8E-04**	---	6.60E-03	6.00E-06		**4E-08**
CHLOROFORM	67-66-3	1.30E+00	Y	1.56E-01	---	9.77E+01	**2E-03**	---	1.34E-02	2.30E-05		**3E-07**
ETHYL ACETATE	141-78-6	3.00E+00	Y	3.61E-01	---	7.00E+01	**5E-03**	---	3.09E-02	-		---
ETHYLBENZENE	100-41-4	1.70E-01	Y	2.04E-02	---	1.00E+03	**2E-05**	---	1.75E-03	2.50E-06		**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.35E+00	N	1.62E-01	---	NA	---	---	1.39E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	9.00E+01	Y	1.08E+01	---	2.00E+02	**5E-02**	---	9.28E-01	-		---
M,P-XYLENE	108-38-3	5.30E-01	Y	6.37E-02	---	1.00E+02	**6E-04**	---	5.46E-03	-		---
METHYLENE CHLORIDE	75-09-2	3.35E-01	N	4.03E-02	---	6.00E+02	**7E-05**	---	3.45E-03	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	2.90E-02	N	3.49E-03	---	3.00E+00	**1E-03**	---	2.99E-04	3.40E-05		**1E-08**
O-XYLENE	95-47-6	2.20E-01	Y	2.65E-02	---	1.00E+02	**3E-04**	---	2.27E-03	-		---
TETRACHLOROETHENE	127-18-4	1.00E+01	Y	1.20E+00	---	4.00E+01	**3E-02**	---	1.03E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.80E-02	Y	3.37E-03	---	2.00E+00	**2E-03**	---	2.89E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	1.65E-02	N	1.98E-03	---	8.00E+01	**2E-05**	---	1.70E-04	4.40E-06	M	**4E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0146H**	**Total Inhalation**	**3E-01**	**0E+00**	**2E-06**
		Based on NDs only	**1E-01**	**0E+00**	**1E-06**
		Based on Detects only	**1E-01**	**All ND**	**5E-07**
		Site-related only	**3E-02**	**0E+00**	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0146H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.35E-01	1.15E-02	6.91E-03	NA	NA	1.0E-08		1E-10	7E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	2.80E-02	9.62E-04	5.77E-04	NA	NA	1.0E-06	kidney	1E-09	6E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	2.80E-02	2.89E-04		NA		3.1E-06	NHL+liver	9E-10		---		**9E-10**
VINYL CHLORIDE	75-01-4	1.65E-02	5.67E-04	3.40E-04	NA	NA	4.4E-06		2E-09	1E-09	---	---	**4E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0148H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.20E-02	N	2.65E-03	---	NA	---	---	2.27E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	1.00E-01	N	1.20E-02	---	2.00E+00	**6E-03**	---	1.03E-03	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	1.60E-01	Y	1.92E-02	---	3.00E+01	**6E-04**	---	1.65E-03	5.00E-06		**8E-09**
1,1,2-TRICHLOROETHANE	79-00-5	2.05E-02	N	2.46E-03	---	2.00E-01	**1E-02**	---	2.11E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	7.82E-02	---	2.00E+00	**4E-02**	---	6.70E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E+00	Y	1.44E-01	---	6.00E+01	**2E-03**	---	1.24E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	9.02E-03	---	9.00E+00	**1E-03**	---	7.73E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	1.32E-02	---	7.00E+00	**2E-03**	---	1.13E-03	2.60E-05		**3E-08**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	1.26E-02	---	4.00E+00	**3E-03**	---	1.08E-03	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	3.90E-01	Y	4.69E-02	---	6.00E+01	**8E-04**	---	4.02E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.10E-02	Y	4.93E-03	---	8.00E+02	**6E-06**	---	4.23E-04	1.10E-05		**5E-09**
BENZENE	71-43-2	8.80E-01	Y	1.06E-01	---	3.00E+01	**4E-03**	---	9.07E-03	7.80E-06		**7E-08**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	2.95E-02	---	1.00E+00	**3E-02**	---	2.53E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	2.50E-01	N	3.01E-02	---	NA	---	---	2.58E-03	3.70E-05		**1E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	9.62E-02	---	5.00E+00	**2E-02**	---	8.25E-03	-		---
CARBON TETRACHLORIDE	56-23-5	5.60E-01	Y	6.73E-02	---	1.00E+02	**7E-04**	---	5.77E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.50E+00	Y	1.80E-01	---	9.77E+01	**2E-03**	---	1.55E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	8.40E+00	Y	1.01E+00	---	7.00E+01	**1E-02**	---	8.66E-02	-		---
ETHYLBENZENE	100-41-4	6.70E-01	Y	8.06E-02	---	1.00E+03	**8E-05**	---	6.91E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	9.62E-02	---	NA	---	---	8.25E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	6.30E+01	Y	7.58E+00	---	2.00E+02	**4E-02**	---	6.49E-01	-		---
M,P-XYLENE	108-38-3	2.00E+00	Y	2.40E-01	---	1.00E+02	**2E-03**	---	2.06E-02	-		---
METHYLENE CHLORIDE	75-09-2	4.40E+01	Y	5.29E+00	---	6.00E+02	**9E-03**	---	4.53E-01	1.00E-08	M	**2E-08**
NAPHTHALENE	91-20-3	5.70E-02	Y	6.85E-03	---	3.00E+00	**2E-03**	---	5.87E-04	3.40E-05		**2E-08**
O-XYLENE	95-47-6	7.80E-01	Y	9.38E-02	---	1.00E+02	**9E-04**	---	8.04E-03	-		---
TETRACHLOROETHENE	127-18-4	2.20E+00	Y	2.65E-01	---	4.00E+01	**7E-03**	---	2.27E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	6.01E-03	---	2.00E+00	**3E-03**	---	5.15E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	6.50E-03	N	7.82E-04	---	8.00E+01	**1E-05**	---	6.70E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0148H**	**Total Inhalation**	**2E-01**	**0E+00**	**1E-06**
		Based on NDs only	**1E-01**	**0E+00**	**9E-07**
		Based on Detects only	**9E-02**	**All ND**	**6E-07**
		Site-related only	**1E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0148H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.40E+01	1.51E+00	9.07E-01	NA	NA	1.0E-08		2E-08	9E-09	---	---	**2E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	1.72E-03	1.03E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	5.15E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	6.50E-03	2.23E-04	1.34E-04	NA	NA	4.4E-06		1E-09	6E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0153H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.05E-02	N	2.46E-03	---	NA	---	---	2.11E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	9.00E-02	N	1.08E-02	---	2.00E+00	**5E-03**	---	9.28E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	1.90E-01	Y	2.28E-02	---	3.00E+01	**8E-04**	---	1.96E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.90E-02	N	2.28E-03	---	2.00E-01	**1E-02**	---	1.96E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	7.21E-02	---	2.00E+00	**4E-02**	---	6.18E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.40E-01	Y	5.29E-02	---	6.00E+01	**9E-04**	---	4.53E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	8.42E-03	---	9.00E+00	**9E-04**	---	7.21E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	1.32E-02	---	7.00E+00	**2E-03**	---	1.13E-03	2.60E-05		**3E-08**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	1.14E-02	---	4.00E+00	**3E-03**	---	9.79E-04	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	1.38E-02	---	6.00E+01	**2E-04**	---	1.19E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	7.50E-02	N	9.02E-03	---	8.00E+02	**1E-05**	---	7.73E-04	1.10E-05		**9E-09**
BENZENE	71-43-2	7.10E-01	Y	8.54E-02	---	3.00E+01	**3E-03**	---	7.32E-03	7.80E-06		**6E-08**
BENZYL CHLORIDE	100-44-7	2.30E-01	N	2.77E-02	---	1.00E+00	**3E-02**	---	2.37E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	2.30E-01	N	2.77E-02	---	NA	---	---	2.37E-03	3.70E-05		**9E-08**
BROMOMETHANE	74-83-9	7.50E-01	N	9.02E-02	---	5.00E+00	**2E-02**	---	7.73E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	5.29E-02	---	1.00E+02	**5E-04**	---	4.53E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.10E+00	Y	1.32E-01	---	9.77E+01	**1E-03**	---	1.13E-02	2.30E-05		**3E-07**
ETHYL ACETATE	141-78-6	8.00E+00	Y	9.62E-01	---	7.00E+01	**1E-02**	---	8.25E-02	-		---
ETHYLBENZENE	100-41-4	2.80E-01	Y	3.37E-02	---	1.00E+03	**3E-05**	---	2.89E-03	2.50E-06		**7E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	9.02E-02	---	NA	---	---	7.73E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	7.00E+01	Y	8.42E+00	---	2.00E+02	**4E-02**	---	7.21E-01	-		---
M,P-XYLENE	108-38-3	9.30E-01	Y	1.12E-01	---	1.00E+02	**1E-03**	---	9.59E-03	-		---
METHYLENE CHLORIDE	75-09-2	6.10E-01	Y	7.33E-02	---	6.00E+02	**1E-04**	---	6.29E-03	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	2.80E-02	N	3.37E-03	---	3.00E+00	**1E-03**	---	2.89E-04	3.40E-05		**1E-08**
O-XYLENE	95-47-6	3.20E-01	Y	3.85E-02	---	1.00E+02	**4E-04**	---	3.30E-03	-		---
TETRACHLOROETHENE	127-18-4	8.20E-01	Y	9.86E-02	---	4.00E+01	**2E-03**	---	8.45E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	6.01E-03	---	2.00E+00	**3E-03**	---	5.15E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	6.00E-03	N	7.21E-04	---	8.00E+01	**9E-06**	---	6.18E-05	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0153H**	**Total Inhalation**	**2E-01**	**0E+00**	**1E-06**
		Based on NDs only	**1E-01**	**0E+00**	**9E-07**
		Based on Detects only	**7E-02**	**All ND**	**4E-07**
		Site-related only	**6E-03**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0153H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.10E-01	2.10E-02	1.26E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	1.72E-03	1.03E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	5.15E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	6.00E-03	2.06E-04	1.24E-04	NA	NA	4.4E-06		9E-10	5E-10	---	---	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0162H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.50E-02	N	3.01E-03	---	NA	---	---	2.58E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	1.15E-01	N	1.38E-02	---	2.00E+00	**7E-03**	---	1.19E-03	3.00E-05		**4E-08**
1,4-DIOXANE	123-91-1	2.00E-01	Y	2.40E-02	---	3.00E+01	**8E-04**	---	2.06E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.35E-02	N	2.83E-03	---	2.00E-01	**1E-02**	---	2.42E-04	1.60E-05		**4E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	7.50E-01	N	9.02E-02	---	2.00E+00	**5E-02**	---	7.73E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E+00	Y	1.44E-01	---	6.00E+01	**2E-03**	---	1.24E-02	-		---
1,2-DIBROMOETHANE	106-93-4	8.50E-02	N	1.02E-02	---	9.00E+00	**1E-03**	---	8.76E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	9.60E-01	Y	1.15E-01	---	7.00E+00	**2E-02**	---	9.89E-03	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	1.20E-01	N	1.44E-02	---	4.00E+00	**4E-03**	---	1.24E-03	3.70E-06		**5E-09**
1,3,5-Trimethylbenzene	108-67-8	2.90E-01	Y	3.49E-02	---	6.00E+01	**6E-04**	---	2.99E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	9.50E-02	N	1.14E-02	---	8.00E+02	**1E-05**	---	9.79E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	2.50E+00	Y	3.01E-01	---	3.00E+01	**1E-02**	---	2.58E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	2.80E-01	N	3.37E-02	---	1.00E+00	**3E-02**	---	2.89E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	2.85E-01	N	3.43E-02	---	NA	---	---	2.94E-03	3.70E-05		**1E-07**
BROMOMETHANE	74-83-9	9.50E-01	N	1.14E-01	---	5.00E+00	**2E-02**	---	9.79E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	5.77E-02	---	1.00E+02	**6E-04**	---	4.95E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	6.80E-01	Y	8.18E-02	---	9.77E+01	**8E-04**	---	7.01E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	6.50E-01	Y	7.82E-02	---	7.00E+01	**1E-03**	---	6.70E-03	-		---
ETHYLBENZENE	100-41-4	1.20E+00	Y	1.44E-01	---	1.00E+03	**1E-04**	---	1.24E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	9.00E-01	N	1.08E-01	---	NA	---	---	9.28E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	1.10E+01	Y	1.32E+00	---	2.00E+02	**7E-03**	---	1.13E-01	-		---
M,P-XYLENE	108-38-3	5.20E+00	Y	6.25E-01	---	1.00E+02	**6E-03**	---	5.36E-02	-		---
METHYLENE CHLORIDE	75-09-2	7.50E-01	Y	9.02E-02	---	6.00E+02	**2E-04**	---	7.73E-03	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	2.75E-02	N	3.31E-03	---	3.00E+00	**1E-03**	---	2.83E-04	3.40E-05		**1E-08**
O-XYLENE	95-47-6	1.50E+00	Y	1.80E-01	---	1.00E+02	**2E-03**	---	1.55E-02	-		---
TETRACHLOROETHENE	127-18-4	5.20E-01	Y	6.25E-02	---	4.00E+01	**2E-03**	---	5.36E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.90E-02	Y	3.49E-03	---	2.00E+00	**2E-03**	---	2.99E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	7.50E-03	N	9.02E-04	---	8.00E+01	**1E-05**	---	7.73E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0162H**	**Total Inhalation**	**2E-01**	**0E+00**	**2E-06**
		Based on NDs only	**1E-01**	**0E+00**	**1E-06**
		Based on Detects only	**5E-02**	**All ND**	**7E-07**
		Site-related only	**4E-03**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0162H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.50E-01	2.58E-02	1.55E-02	NA	NA	1.0E-08		3E-10	2E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	2.90E-02	9.96E-04	5.98E-04	NA	NA	1.0E-06	kidney	1E-09	6E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	2.90E-02	2.99E-04		NA		3.1E-06	NHL+liver	9E-10		---		**9E-10**
VINYL CHLORIDE	75-01-4	7.50E-03	2.58E-04	1.55E-04	NA	NA	4.4E-06		1E-09	7E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0166H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00E-02	N	2.40E-03	---	NA	---	---	2.06E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	9.00E-02	N	1.08E-02	---	2.00E+00	**5E-03**	---	9.28E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	1.50E-01	Y	1.80E-02	---	3.00E+01	**6E-04**	---	1.55E-03	5.00E-06		**8E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.85E-02	N	2.22E-03	---	2.00E-01	**1E-02**	---	1.91E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	1.10E+00	N	1.32E-01	---	2.00E+00	**7E-02**	---	1.13E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.20E-01	Y	3.85E-02	---	6.00E+01	**6E-04**	---	3.30E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.50E-02	N	7.82E-03	---	9.00E+00	**9E-04**	---	6.70E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	1.32E-02	---	7.00E+00	**2E-03**	---	1.13E-03	2.60E-05		**3E-08**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	1.14E-02	---	4.00E+00	**3E-03**	---	9.79E-04	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	1.38E-02	---	6.00E+01	**2E-04**	---	1.19E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	7.50E-02	N	9.02E-03	---	8.00E+02	**1E-05**	---	7.73E-04	1.10E-05		**9E-09**
BENZENE	71-43-2	6.20E-01	Y	7.46E-02	---	3.00E+01	**2E-03**	---	6.39E-03	7.80E-06		**5E-08**
BENZYL CHLORIDE	100-44-7	2.25E-01	N	2.71E-02	---	1.00E+00	**3E-02**	---	2.32E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	2.25E-01	N	2.71E-02	---	NA	---	---	2.32E-03	3.70E-05		**9E-08**
BROMOMETHANE	74-83-9	7.50E-01	N	9.02E-02	---	5.00E+00	**2E-02**	---	7.73E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	5.65E-02	---	1.00E+02	**6E-04**	---	4.84E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.60E+00	Y	1.92E-01	---	9.77E+01	**2E-03**	---	1.65E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	1.40E+01	Y	1.68E+00	---	7.00E+01	**2E-02**	---	1.44E-01	-		---
ETHYLBENZENE	100-41-4	3.30E-01	Y	3.97E-02	---	1.00E+03	**4E-05**	---	3.40E-03	2.50E-06		**9E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	1.02E-01	---	NA	---	---	8.76E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	3.80E+02	Y	4.57E+01	---	2.00E+02	**2E-01**	---	3.92E+00	-		---
M,P-XYLENE	108-38-3	1.10E+00	Y	1.32E-01	---	1.00E+02	**1E-03**	---	1.13E-02	-		---
METHYLENE CHLORIDE	75-09-2	1.60E+00	Y	1.92E-01	---	6.00E+02	**3E-04**	---	1.65E-02	1.00E-08	M	**9E-10**
NAPHTHALENE	91-20-3	2.95E-02	N	3.55E-03	---	3.00E+00	**1E-03**	---	3.04E-04	3.40E-05		**1E-08**
O-XYLENE	95-47-6	3.60E-01	Y	4.33E-02	---	1.00E+02	**4E-04**	---	3.71E-03	-		---
TETRACHLOROETHENE	127-18-4	5.70E+00	Y	6.85E-01	---	4.00E+01	**2E-02**	---	5.87E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	9.80E-01	Y	1.18E-01	---	2.00E+00	**6E-02**	---	1.01E-02	4.10E-06	M	**9E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	6.00E-03	N	7.21E-04	---	8.00E+01	**9E-06**	---	6.18E-05	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0166H**	**Total Inhalation**	**5E-01**	**0E+00**	**1E-06**
		Based on NDs only	**1E-01**	**0E+00**	**9E-07**
		Based on Detects only	**3E-01**	**All ND**	**6E-07**
		Site-related only	**8E-02**	**0E+00**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0166H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.60E+00	5.50E-02	3.30E-02	NA	NA	1.0E-08		5E-10	3E-10	---	---	**9E-10**
TRICHLOROETHENE	79-01-6	9.80E-01	3.37E-02	2.02E-02	NA	NA	1.0E-06	kidney	3E-08	2E-08	---	---	**5E-08**
TRICHLOROETHENE	79-01-6	9.80E-01	1.01E-02		NA		3.1E-06	NHL+liver	3E-08		---		**3E-08**
VINYL CHLORIDE	75-01-4	6.00E-03	2.06E-04	1.24E-04	NA	NA	4.4E-06		9E-10	5E-10	---	---	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0172H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.30E-02	N	2.77E-03	---	NA	---	---	2.37E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	4.75E-02	N	5.71E-03	---	2.00E+00	**3E-03**	---	4.90E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	8.00E-02	N	9.62E-03	---	3.00E+01	**3E-04**	---	8.25E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.15E-02	N	1.38E-03	---	2.00E-01	**7E-03**	---	1.19E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.75E-01	N	5.71E-02	---	2.00E+00	**3E-02**	---	4.90E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.20E-01	Y	6.25E-02	---	6.00E+01	**1E-03**	---	5.36E-03	-		---
1,2-DIBROMOETHANE	106-93-4	4.15E-02	N	4.99E-03	---	9.00E+00	**6E-04**	---	4.28E-04	6.00E-04		**3E-07**
1,2-DICHLOROETHANE	107-06-2	7.30E-02	Y	8.78E-03	---	7.00E+00	**1E-03**	---	7.52E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	1.08E-02	---	4.00E+00	**3E-03**	---	9.28E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	1.60E-01	Y	1.92E-02	---	6.00E+01	**3E-04**	---	1.65E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.35E-02	N	5.23E-03	---	8.00E+02	**7E-06**	---	4.48E-04	1.10E-05		**5E-09**
BENZENE	71-43-2	3.40E-01	Y	4.09E-02	---	3.00E+01	**1E-03**	---	3.50E-03	7.80E-06		**3E-08**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	1.26E-02	---	1.00E+00	**1E-02**	---	1.08E-03	4.90E-05		**5E-08**
BROMODICHLOROMETHANE	75-27-4	1.05E-01	N	1.26E-02	---	NA	---	---	1.08E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	5.50E-01	N	6.61E-02	---	5.00E+00	**1E-02**	---	5.67E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	4.93E-02	---	1.00E+02	**5E-04**	---	4.23E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.40E-01	Y	1.68E-02	---	9.77E+01	**2E-04**	---	1.44E-03	2.30E-05		**3E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	9.80E-02	Y	1.18E-02	---	1.00E+03	**1E-05**	---	1.01E-03	2.50E-06		**3E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.90E-01	N	4.69E-02	---	NA	---	---	4.02E-03	2.20E-05		**9E-08**
ISOPROPYL ALCOHOL	67-63-0	1.20E+01	Y	1.44E+00	---	2.00E+02	**7E-03**	---	1.24E-01	-		---
M,P-XYLENE	108-38-3	3.30E-01	Y	3.97E-02	---	1.00E+02	**4E-04**	---	3.40E-03	-		---
METHYLENE CHLORIDE	75-09-2	5.40E-01	Y	6.49E-02	---	6.00E+02	**1E-04**	---	5.57E-03	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.20E-01	Y	1.44E-02	---	1.00E+02	**1E-04**	---	1.24E-03	-		---
TETRACHLOROETHENE	127-18-4	4.30E+00	Y	5.17E-01	---	4.00E+01	**1E-02**	---	4.43E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	2.80E-02	Y	3.37E-03	---	2.00E+00	**2E-03**	---	2.89E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	3.65E-03	N	4.39E-04	---	8.00E+01	**5E-06**	---	3.76E-05	4.40E-06	M	**9E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0172H**	**Total Inhalation**	**9E-02**	**0E+00**	**6E-07**
		Based on NDs only	**7E-02**	**0E+00**	**5E-07**
		Based on Detects only	**3E-02**	**All ND**	**1E-07**
		Site-related only	**1E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0172H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.40E-01	1.86E-02	1.11E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	2.80E-02	9.62E-04	5.77E-04	NA	NA	1.0E-06	kidney	1E-09	6E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	2.80E-02	2.89E-04		NA		3.1E-06	NHL+liver	9E-10		---		**9E-10**
VINYL CHLORIDE	75-01-4	3.65E-03	1.25E-04	7.52E-05	NA	NA	4.4E-06		6E-10	3E-10	---	---	**9E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0173H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.20E-02	N	2.65E-03	---	NA	---	---	2.27E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	1.00E-01	N	1.20E-02	---	2.00E+00	**6E-03**	---	1.03E-03	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	1.40E-01	Y	1.68E-02	---	3.00E+01	**6E-04**	---	1.44E-03	5.00E-06		**7E-09**
1,1,2-TRICHLOROETHANE	79-00-5	2.05E-02	N	2.46E-03	---	2.00E-01	**1E-02**	---	2.11E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	7.82E-02	---	2.00E+00	**4E-02**	---	6.70E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.70E-01	Y	5.65E-02	---	6.00E+01	**9E-04**	---	4.84E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	8.42E-03	---	9.00E+00	**9E-04**	---	7.21E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	2.00E-01	Y	2.40E-02	---	7.00E+00	**3E-03**	---	2.06E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	1.26E-02	---	4.00E+00	**3E-03**	---	1.08E-03	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	1.25E-01	N	1.50E-02	---	6.00E+01	**3E-04**	---	1.29E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	9.62E-03	---	8.00E+02	**1E-05**	---	8.25E-04	1.10E-05		**9E-09**
BENZENE	71-43-2	5.70E-01	Y	6.85E-02	---	3.00E+01	**2E-03**	---	5.87E-03	7.80E-06		**5E-08**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	2.95E-02	---	1.00E+00	**3E-02**	---	2.53E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	2.50E-01	N	3.01E-02	---	NA	---	---	2.58E-03	3.70E-05		**1E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	9.62E-02	---	5.00E+00	**2E-02**	---	8.25E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	5.41E-02	---	1.00E+02	**5E-04**	---	4.64E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	2.00E+00	Y	2.40E-01	---	9.77E+01	**2E-03**	---	2.06E-02	2.30E-05		**5E-07**
ETHYL ACETATE	141-78-6	7.00E+00	Y	8.42E-01	---	7.00E+01	**1E-02**	---	7.21E-02	-		---
ETHYLBENZENE	100-41-4	1.10E-01	Y	1.32E-02	---	1.00E+03	**1E-05**	---	1.13E-03	2.50E-06		**3E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	9.62E-02	---	NA	---	---	8.25E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	2.70E+01	Y	3.25E+00	---	2.00E+02	**2E-02**	---	2.78E-01	-		---
M,P-XYLENE	108-38-3	4.50E-01	Y	5.41E-02	---	1.00E+02	**5E-04**	---	4.64E-03	-		---
METHYLENE CHLORIDE	75-09-2	3.25E-01	N	3.91E-02	---	6.00E+02	**7E-05**	---	3.35E-03	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	2.90E-02	N	3.49E-03	---	3.00E+00	**1E-03**	---	2.99E-04	3.40E-05		**1E-08**
O-XYLENE	95-47-6	2.10E-01	Y	2.53E-02	---	1.00E+02	**3E-04**	---	2.16E-03	-		---
TETRACHLOROETHENE	127-18-4	5.10E+00	Y	6.13E-01	---	4.00E+01	**2E-02**	---	5.26E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	1.20E-01	Y	1.44E-02	---	2.00E+00	**7E-03**	---	1.24E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	6.50E-03	N	7.82E-04	---	8.00E+01	**1E-05**	---	6.70E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0173H**	**Total Inhalation**	**2E-01**	**0E+00**	**2E-06**
		Based on NDs only	**1E-01**	**0E+00**	**9E-07**
		Based on Detects only	**6E-02**	**All ND**	**6E-07**
		Site-related only	**2E-02**	**0E+00**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0173H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.25E-01	1.12E-02	6.70E-03	NA	NA	1.0E-08		1E-10	7E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	1.20E-01	4.12E-03	2.47E-03	NA	NA	1.0E-06	kidney	4E-09	2E-09	---	---	**7E-09**
TRICHLOROETHENE	79-01-6	1.20E-01	1.24E-03		NA		3.1E-06	NHL+liver	4E-09		---		**4E-09**
VINYL CHLORIDE	75-01-4	6.50E-03	2.23E-04	1.34E-04	NA	NA	4.4E-06		1E-09	6E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0174H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00E-02	N	2.40E-03	---	NA	---	---	2.06E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	9.00E-02	N	1.08E-02	---	2.00E+00	**5E-03**	---	9.28E-04	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	5.50E-01	Y	6.61E-02	---	3.00E+01	**2E-03**	---	5.67E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.85E-02	N	2.22E-03	---	2.00E-01	**1E-02**	---	1.91E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	7.21E-02	---	2.00E+00	**4E-02**	---	6.18E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	6.40E-01	Y	7.70E-02	---	6.00E+01	**1E-03**	---	6.60E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.50E-02	N	7.82E-03	---	9.00E+00	**9E-04**	---	6.70E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	2.20E+00	Y	2.65E-01	---	7.00E+00	**4E-02**	---	2.27E-02	2.60E-05		**6E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	1.14E-02	---	4.00E+00	**3E-03**	---	9.79E-04	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	2.20E-01	Y	2.65E-02	---	6.00E+01	**4E-04**	---	2.27E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	1.70E-01	Y	2.04E-02	---	8.00E+02	**3E-05**	---	1.75E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	9.30E-01	Y	1.12E-01	---	3.00E+01	**4E-03**	---	9.59E-03	7.80E-06		**7E-08**
BENZYL CHLORIDE	100-44-7	2.25E-01	N	2.71E-02	---	1.00E+00	**3E-02**	---	2.32E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	1.00E+00	Y	1.20E-01	---	NA	---	---	1.03E-02	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	7.50E-01	N	9.02E-02	---	5.00E+00	**2E-02**	---	7.73E-03	-		---
CARBON TETRACHLORIDE	56-23-5	7.10E-01	Y	8.54E-02	---	1.00E+02	**9E-04**	---	7.32E-03	6.00E-06		**4E-08**
CHLOROFORM	67-66-3	4.20E+00	Y	5.05E-01	---	9.77E+01	**5E-03**	---	4.33E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	1.00E+01	Y	1.20E+00	---	7.00E+01	**2E-02**	---	1.03E-01	-		---
ETHYLBENZENE	100-41-4	2.30E+00	Y	2.77E-01	---	1.00E+03	**3E-04**	---	2.37E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	9.02E-02	---	NA	---	---	7.73E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	1.80E+01	Y	2.16E+00	---	2.00E+02	**1E-02**	---	1.86E-01	-		---
M,P-XYLENE	108-38-3	8.20E+00	Y	9.86E-01	---	1.00E+02	**1E-02**	---	8.45E-02	-		---
METHYLENE CHLORIDE	75-09-2	2.20E+00	Y	2.65E-01	---	6.00E+02	**4E-04**	---	2.27E-02	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	2.90E-02	N	3.49E-03	---	3.00E+00	**1E-03**	---	2.99E-04	3.40E-05		**1E-08**
O-XYLENE	95-47-6	2.30E+00	Y	2.77E-01	---	1.00E+02	**3E-03**	---	2.37E-02	-		---
TETRACHLOROETHENE	127-18-4	1.70E+00	Y	2.04E-01	---	4.00E+01	**5E-03**	---	1.75E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	6.01E-03	---	2.00E+00	**3E-03**	---	5.15E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	---	---	-		---
VINYL CHLORIDE	75-01-4	1.00E-01	Y	1.20E-02	---	8.00E+01	**2E-04**	---	1.03E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0174H**	**Total Inhalation**	**2E-01**	**0E+00**	**3E-06**
		Based on NDs only	**1E-01**	**0E+00**	**7E-07**
		Based on Detects only	**1E-01**	**All ND**	**2E-06**
		Site-related only	**1E-02**	**0E+00**	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0174H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.20E+00	7.56E-02	4.53E-02	NA	NA	1.0E-08		8E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	1.72E-03	1.03E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	5.15E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	1.00E-01	3.44E-03	2.06E-03	NA	NA	4.4E-06		2E-08	9E-09	---	---	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0180H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.65E-02	N	3.19E-03	---	NA	---	---	2.73E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	5.50E-02	N	6.61E-03	---	2.00E+00	**3E-03**	---	5.67E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	1.08E-02	---	3.00E+01	**4E-04**	---	9.28E-04	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.30E-02	N	1.56E-03	---	2.00E-01	**8E-03**	---	1.34E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.50E-01	N	6.61E-02	---	2.00E+00	**3E-02**	---	5.67E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	6.00E-02	N	7.21E-03	---	6.00E+01	**1E-04**	---	6.18E-04	-		---
1,2-DIBROMOETHANE	106-93-4	4.70E-02	N	5.65E-03	---	9.00E+00	**6E-04**	---	4.84E-04	6.00E-04		**3E-07**
1,2-DICHLOROETHANE	107-06-2	7.30E-02	Y	8.78E-03	---	7.00E+00	**1E-03**	---	7.52E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	1.26E-02	---	4.00E+00	**3E-03**	---	1.08E-03	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	9.00E-02	N	1.08E-02	---	6.00E+01	**2E-04**	---	9.28E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	4.95E-02	N	5.95E-03	---	8.00E+02	**7E-06**	---	5.10E-04	1.10E-05		**6E-09**
BENZENE	71-43-2	3.70E-01	Y	4.45E-02	---	3.00E+01	**1E-03**	---	3.81E-03	7.80E-06		**3E-08**
BENZYL CHLORIDE	100-44-7	1.15E-01	N	1.38E-02	---	1.00E+00	**1E-02**	---	1.19E-03	4.90E-05		**6E-08**
BROMODICHLOROMETHANE	75-27-4	1.20E-01	N	1.44E-02	---	NA	---	---	1.24E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	6.50E-01	N	7.82E-02	---	5.00E+00	**2E-02**	---	6.70E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	5.05E-02	---	1.00E+02	**5E-04**	---	4.33E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.30E-01	Y	1.56E-02	---	9.77E+01	**2E-04**	---	1.34E-03	2.30E-05		**3E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	5.60E-02	Y	6.73E-03	---	1.00E+03	**7E-06**	---	5.77E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.45E-01	N	5.35E-02	---	NA	---	---	4.59E-03	2.20E-05		**1E-07**
ISOPROPYL ALCOHOL	67-63-0	1.30E+01	Y	1.56E+00	---	2.00E+02	**8E-03**	---	1.34E-01	-		---
M,P-XYLENE	108-38-3	1.90E-01	Y	2.28E-02	---	1.00E+02	**2E-04**	---	1.96E-03	-		---
METHYLENE CHLORIDE	75-09-2	6.80E-01	Y	8.18E-02	---	6.00E+02	**1E-04**	---	7.01E-03	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	6.10E-02	Y	7.33E-03	---	1.00E+02	**7E-05**	---	6.29E-04	-		---
TETRACHLOROETHENE	127-18-4	4.40E-02	Y	5.29E-03	---	4.00E+01	**1E-04**	---	4.53E-04	2.60E-07		**1E-10**
TRICHLOROETHENE	79-01-6	9.00E-03	N	1.08E-03	---	2.00E+00	**5E-04**	---	9.28E-05	4.10E-06	M	**8E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	4.20E-03	N	5.05E-04	---	8.00E+01	**6E-06**	---	4.33E-05	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0180H**	**Total Inhalation**	**9E-02**	**0E+00**	**7E-07**
		Based on NDs only	**8E-02**	**0E+00**	**5E-07**
		Based on Detects only	**1E-02**	**All ND**	**1E-07**
		Site-related only	**1E-03**	**0E+00**	**7E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0180H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.80E-01	2.34E-02	1.40E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	9.00E-03	3.09E-04	1.86E-04	NA	NA	1.0E-06	kidney	3E-10	2E-10	---	---	**5E-10**
TRICHLOROETHENE	79-01-6	9.00E-03	9.28E-05		NA		3.1E-06	NHL+liver	3E-10		---		**3E-10**
VINYL CHLORIDE	75-01-4	4.20E-03	1.44E-04	8.66E-05	NA	NA	4.4E-06		6E-10	4E-10	---	---	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0189H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	1.26E-03	---	NA	---	---	1.08E-04	5.80E-05		**6E-09**
1,3-BUTADIENE	106-99-0	4.95E-02	N	5.95E-03	---	2.00E+00	**3E-03**	---	5.10E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	7.00E-02	N	8.42E-03	---	3.00E+01	**3E-04**	---	7.21E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	8.42E-04	---	2.00E-01	**4E-03**	---	7.21E-05	1.60E-05		**1E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.85E-01	N	5.83E-02	---	2.00E+00	**3E-02**	---	5.00E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.30E-01	Y	1.56E-02	---	6.00E+01	**3E-04**	---	1.34E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	3.97E-03	---	9.00E+00	**4E-04**	---	3.40E-04	6.00E-04		**2E-07**
1,2-DICHLOROETHANE	107-06-2	7.40E-02	Y	8.90E-03	---	7.00E+00	**1E-03**	---	7.63E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	1.08E-02	---	4.00E+00	**3E-03**	---	9.28E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	7.21E-03	---	6.00E+01	**1E-04**	---	6.18E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	6.01E-03	---	8.00E+02	**8E-06**	---	5.15E-04	1.10E-05		**6E-09**
BENZENE	71-43-2	4.10E-01	Y	4.93E-02	---	3.00E+01	**2E-03**	---	4.23E-03	7.80E-06		**3E-08**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	1.02E-02	---	1.00E+00	**1E-02**	---	8.76E-04	4.90E-05		**4E-08**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	1.50E-02	---	NA	---	---	1.29E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	6.50E-01	N	7.82E-02	---	5.00E+00	**2E-02**	---	6.70E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	5.65E-02	---	1.00E+02	**6E-04**	---	4.84E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	8.40E-01	Y	1.01E-01	---	9.77E+01	**1E-03**	---	8.66E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.70E-01	Y	2.04E-02	---	1.00E+03	**2E-05**	---	1.75E-03	2.50E-06		**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	7.82E-02	---	NA	---	---	6.70E-03	2.20E-05		**1E-07**
ISOPROPYL ALCOHOL	67-63-0	2.40E+02	Y	2.89E+01	---	2.00E+02	**1E-01**	---	2.47E+00	-		---
M,P-XYLENE	108-38-3	4.80E-01	Y	5.77E-02	---	1.00E+02	**6E-04**	---	4.95E-03	-		---
METHYLENE CHLORIDE	75-09-2	2.15E-01	N	2.59E-02	---	6.00E+02	**4E-05**	---	2.22E-03	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.70E-01	Y	2.04E-02	---	1.00E+02	**2E-04**	---	1.75E-03	-		---
TETRACHLOROETHENE	127-18-4	2.60E+00	Y	3.13E-01	---	4.00E+01	**8E-03**	---	2.68E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	1.90E-01	Y	2.28E-02	---	2.00E+00	**1E-02**	---	1.96E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.00E-03	N	9.62E-04	---	8.00E+01	**1E-05**	---	8.25E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0189H**	**Total Inhalation**	**2E-01**	**0E+00**	**8E-07**
		Based on NDs only	**7E-02**	**0E+00**	**5E-07**
		Based on Detects only	**2E-01**	**All ND**	**3E-07**
		Site-related only	**2E-02**	**0E+00**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0189H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.15E-01	7.39E-03	4.43E-03	NA	NA	1.0E-08		7E-11	4E-11	---	---	**1E-10**
TRICHLOROETHENE	79-01-6	1.90E-01	6.53E-03	3.92E-03	NA	NA	1.0E-06	kidney	7E-09	4E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	1.90E-01	1.96E-03		NA		3.1E-06	NHL+liver	6E-09		---		**6E-09**
VINYL CHLORIDE	75-01-4	8.00E-03	2.75E-04	1.65E-04	NA	NA	4.4E-06		1E-09	7E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0192H**

Pathway:
Inhalation of Indoor Air

			RME child	RME adult			RME lifetime		
		TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02		

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	1.32E-03	---	NA	---	---	1.13E-04	5.80E-05		**7E-09**
1,3-BUTADIENE	106-99-0	5.00E-02	N	6.01E-03	---	2.00E+00	**3E-03**	---	5.15E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	7.50E-02	N	9.02E-03	---	3.00E+01	**3E-04**	---	7.73E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	9.02E-04	---	2.00E-01	**5E-03**	---	7.73E-05	1.60E-05		**1E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	6.01E-02	---	2.00E+00	**3E-02**	---	5.15E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.30E-01	Y	1.56E-02	---	6.00E+01	**3E-04**	---	1.34E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.50E-02	N	4.21E-03	---	9.00E+00	**5E-04**	---	3.61E-04	6.00E-04		**2E-07**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	9.26E-03	---	7.00E+00	**1E-03**	---	7.94E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	1.14E-02	---	4.00E+00	**3E-03**	---	9.79E-04	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	7.21E-03	---	6.00E+01	**1E-04**	---	6.18E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	6.61E-03	---	8.00E+02	**8E-06**	---	5.67E-04	1.10E-05		**6E-09**
BENZENE	71-43-2	1.10E+00	Y	1.32E-01	---	3.00E+01	**4E-03**	---	1.13E-02	7.80E-06		**9E-08**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	1.08E-02	---	1.00E+00	**1E-02**	---	9.28E-04	4.90E-05		**5E-08**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	1.56E-02	---	NA	---	---	1.34E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	7.00E-01	N	8.42E-02	---	5.00E+00	**2E-02**	---	7.21E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	5.65E-02	---	1.00E+02	**6E-04**	---	4.84E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.30E+00	Y	1.56E-01	---	9.77E+01	**2E-03**	---	1.34E-02	2.30E-05		**3E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.00E-01	Y	2.40E-02	---	1.00E+03	**2E-05**	---	2.06E-03	2.50E-06		**5E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	8.42E-02	---	NA	---	---	7.21E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	1.20E+01	Y	1.44E+00	---	2.00E+02	**7E-03**	---	1.24E-01	-		---
M,P-XYLENE	108-38-3	6.00E-01	Y	7.21E-02	---	1.00E+02	**7E-04**	---	6.18E-03	-		---
METHYLENE CHLORIDE	75-09-2	2.25E-01	N	2.71E-02	---	6.00E+02	**5E-05**	---	2.32E-03	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.20E-01	Y	2.65E-02	---	1.00E+02	**3E-04**	---	2.27E-03	-		---
TETRACHLOROETHENE	127-18-4	1.60E+01	Y	1.92E+00	---	4.00E+01	**5E-02**	---	1.65E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	4.30E-01	Y	5.17E-02	---	2.00E+00	**3E-02**	---	4.43E-03	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.50E-03	N	1.02E-03	---	8.00E+01	**1E-05**	---	8.76E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0192H**	**Total Inhalation**	**2E-01**	**0E+00**	**1E-06**
		Based on NDs only	**7E-02**	**0E+00**	**5E-07**
		Based on Detects only	**9E-02**	**All ND**	**5E-07**
		Site-related only	**7E-02**	**0E+00**	**9E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0192H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.25E-01	7.73E-03	4.64E-03	NA	NA	1.0E-08		8E-11	5E-11	---	---	**1E-10**
TRICHLOROETHENE	79-01-6	4.30E-01	1.48E-02	8.86E-03	NA	NA	1.0E-06	kidney	1E-08	9E-09	---	---	**2E-08**
TRICHLOROETHENE	79-01-6	4.30E-01	4.43E-03		NA		3.1E-06	NHL+liver	1E-08		---		**1E-08**
VINYL CHLORIDE	75-01-4	8.50E-03	2.92E-04	1.75E-04	NA	NA	4.4E-06		1E-09	8E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0193H**

Pathway:
Inhalation of Indoor Air

			RME child	RME adult			RME lifetime		
		TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02		

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	8.24E-03	---	NA	---	---	7.06E-04	5.80E-05		**4E-08**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.66E-01	---	2.00E+00	**1E-01**	---	2.28E-02	3.00E-05		**7E-07**
1,4-DIOXANE	123-91-1	3.61E-01	N	4.33E-02	---	3.00E+01	**1E-03**	---	3.72E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	9.80E-03	---	2.00E-01	**5E-02**	---	8.40E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.80E-01	---	2.00E+00	**1E-01**	---	2.40E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	5.90E-02	---	6.00E+01	**1E-03**	---	5.06E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	9.26E-03	---	9.00E+00	**1E-03**	---	7.94E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	1.02E-01	Y	1.23E-02	---	7.00E+00	**2E-03**	---	1.05E-03	2.60E-05		**3E-08**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	8.36E-03	---	4.00E+00	**2E-03**	---	7.16E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	5.90E-02	---	6.00E+01	**1E-03**	---	5.06E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	7.21E-03	---	8.00E+02	**9E-06**	---	6.18E-04	1.10E-05		**7E-09**
BENZENE	71-43-2	4.89E-01	Y	5.88E-02	---	3.00E+01	**2E-03**	---	5.04E-03	7.80E-06		**4E-08**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	6.25E-02	---	1.00E+00	**6E-02**	---	5.36E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	8.06E-02	---	NA	---	---	6.91E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	3.88E-01	N	4.67E-02	---	5.00E+00	**9E-03**	---	4.00E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.74E-01	Y	6.90E-02	---	1.00E+02	**7E-04**	---	5.92E-03	6.00E-06		**4E-08**
CHLOROFORM	67-66-3	1.55E+00	Y	1.86E-01	---	9.77E+01	**2E-03**	---	1.60E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.86E-01	Y	2.24E-02	---	1.00E+03	**2E-05**	---	1.92E-03	2.50E-06		**5E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	4.05E-01	---	NA	---	---	3.47E-02	2.20E-05		**8E-07**
ISOPROPYL ALCOHOL	67-63-0	1.15E+01	Y	1.38E+00	---	2.00E+02	**7E-03**	---	1.19E-01	-		**---**
M,P-XYLENE	108-38-3	6.76E-01	Y	8.13E-02	---	1.00E+02	**8E-04**	---	6.97E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	6.74E-01	Y	8.10E-02	---	6.00E+02	**1E-04**	---	6.95E-03	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	1.98E-01	---	3.00E+00	**7E-02**	---	1.70E-02	3.40E-05		**6E-07**
O-XYLENE	95-47-6	4.34E-01	N	5.21E-02	---	1.00E+02	**5E-04**	---	4.47E-03	-		**---**
TETRACHLOROETHENE	127-18-4	3.82E+00	Y	4.59E-01	---	4.00E+01	**1E-02**	---	3.94E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	7.18E-01	Y	8.63E-02	---	2.00E+00	**4E-02**	---	7.40E-03	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	4.23E-03	---	2.00E+02	**2E-05**	---	3.63E-04	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	3.07E-03	---	8.00E+01	**4E-05**	---	2.63E-04	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0193H**	**Total Inhalation**	**5E-01**	**0E+00**	**4E-06**
		Based on NDs only	**5E-01**	**0E+00**	**3E-06**
		Based on Detects only	**7E-02**	**All ND**	**5E-07**
		Site-related only	**6E-02**	**0E+00**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0193H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.74E-01	2.32E-02	1.39E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	7.18E-01	2.47E-02	1.48E-02	NA	NA	1.0E-06	kidney	2E-08	1E-08	---	---	**4E-08**
TRICHLOROETHENE	79-01-6	7.18E-01	7.40E-03		NA		3.1E-06	NHL+liver	2E-08		---		**2E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	8.78E-04	5.27E-04	NA	NA	4.4E-06		4E-09	2E-09	---	---	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0194H**

Pathway:
Inhalation of Indoor Air

			RME child	RME adult			RME lifetime		
		TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02		

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	8.24E-03	---	NA	---	---	7.06E-04	5.80E-05		**4E-08**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.66E-01	---	2.00E+00	**1E-01**	---	2.28E-02	3.00E-05		**7E-07**
1,4-DIOXANE	123-91-1	3.61E-01	N	4.33E-02	---	3.00E+01	**1E-03**	---	3.72E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	9.80E-03	---	2.00E-01	**5E-02**	---	8.40E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.80E-01	---	2.00E+00	**1E-01**	---	2.40E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	5.90E-02	---	6.00E+01	**1E-03**	---	5.06E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	9.26E-03	---	9.00E+00	**1E-03**	---	7.94E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	1.22E-01	Y	1.47E-02	---	7.00E+00	**2E-03**	---	1.26E-03	2.60E-05		**3E-08**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	8.36E-03	---	4.00E+00	**2E-03**	---	7.16E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	5.90E-02	---	6.00E+01	**1E-03**	---	5.06E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	7.21E-03	---	8.00E+02	**9E-06**	---	6.18E-04	1.10E-05		**7E-09**
BENZENE	71-43-2	5.69E-01	Y	6.84E-02	---	3.00E+01	**2E-03**	---	5.86E-03	7.80E-06		**5E-08**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	6.25E-02	---	1.00E+00	**6E-02**	---	5.36E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	8.06E-02	---	NA	**---**	---	6.91E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	3.88E-01	N	4.67E-02	---	5.00E+00	**9E-03**	---	4.00E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.46E-01	Y	6.57E-02	---	1.00E+02	**7E-04**	---	5.63E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	7.40E-01	Y	8.90E-02	---	9.77E+01	**9E-04**	---	7.63E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	---	---	-		**---**
ETHYLBENZENE	100-41-4	4.23E-01	Y	5.09E-02	---	1.00E+03	**5E-05**	---	4.36E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	4.05E-01	---	NA	**---**	---	3.47E-02	2.20E-05		**8E-07**
ISOPROPYL ALCOHOL	67-63-0	9.27E+00	Y	1.11E+00	---	2.00E+02	**6E-03**	---	9.55E-02	-		**---**
M,P-XYLENE	108-38-3	1.14E+00	Y	1.37E-01	---	1.00E+02	**1E-03**	---	1.17E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	6.67E-01	Y	8.02E-02	---	6.00E+02	**1E-04**	---	6.87E-03	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	1.98E-01	---	3.00E+00	**7E-02**	---	1.70E-02	3.40E-05		**6E-07**
O-XYLENE	95-47-6	4.34E-01	N	5.21E-02	---	1.00E+02	**5E-04**	---	4.47E-03	-		**---**
TETRACHLOROETHENE	127-18-4	1.06E+01	Y	1.27E+00	---	4.00E+01	**3E-02**	---	1.09E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	7.18E-01	Y	8.63E-02	---	2.00E+00	**4E-02**	---	7.40E-03	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	4.23E-03	---	2.00E+02	**2E-05**	---	3.63E-04	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	3.07E-03	---	8.00E+01	**4E-05**	---	2.63E-04	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0194H**	**Total Inhalation**	**6E-01**	**0E+00**	**3E-06**
		Based on NDs only	**5E-01**	**0E+00**	**3E-06**
		Based on Detects only	**9E-02**	**All ND**	**4E-07**
		Site-related only	**8E-02**	**0E+00**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0194H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.67E-01	2.29E-02	1.37E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	7.18E-01	2.47E-02	1.48E-02	NA	NA	1.0E-06	kidney	2E-08	1E-08	---	---	**4E-08**
TRICHLOROETHENE	79-01-6	7.18E-01	7.40E-03		NA		3.1E-06	NHL+liver	2E-08		---		**2E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	8.78E-04	5.27E-04	NA	NA	4.4E-06		4E-09	2E-09	---	---	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0195H**

Pathway:
Inhalation of Indoor Air

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	8.24E-03	---	NA	---	---	7.06E-04	5.80E-05	**4E-08**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.66E-01	---	2.00E+00	**1E-01**	---	2.28E-02	3.00E-05	**7E-07**
1,4-DIOXANE	123-91-1	3.61E-01	N	4.33E-02	---	3.00E+01	**1E-03**	---	3.72E-03	5.00E-06	**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	9.80E-03	---	2.00E-01	**5E-02**	---	8.40E-04	1.60E-05	**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.80E-01	---	2.00E+00	**1E-01**	---	2.40E-02	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.35E+00	Y	6.43E-01	---	6.00E+01	**1E-02**	---	5.51E-02	-	**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	9.26E-03	---	9.00E+00	**1E-03**	---	7.94E-04	6.00E-04	**5E-07**
1,2-DICHLOROETHANE	107-06-2	1.24E-01	Y	1.49E-02	---	7.00E+00	**2E-03**	---	1.28E-03	2.60E-05	**3E-08**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	8.36E-03	---	4.00E+00	**2E-03**	---	7.16E-04	3.70E-06	**3E-09**
1,3,5-Trimethylbenzene	108-67-8	1.59E+00	Y	1.91E-01	---	6.00E+01	**3E-03**	---	1.64E-02	-	**---**
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	7.21E-03	---	8.00E+02	**9E-06**	---	6.18E-04	1.10E-05	**7E-09**
BENZENE	71-43-2	6.26E-01	Y	7.53E-02	---	3.00E+01	**3E-03**	---	6.45E-03	7.80E-06	**5E-08**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	6.25E-02	---	1.00E+00	**6E-02**	---	5.36E-03	4.90E-05	**3E-07**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	8.06E-02	---	NA	---	---	6.91E-03	3.70E-05	**3E-07**
BROMOMETHANE	74-83-9	3.88E-01	N	4.67E-02	---	5.00E+00	**9E-03**	---	4.00E-03	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.96E-01	Y	5.96E-02	---	1.00E+02	**6E-04**	---	5.11E-03	6.00E-06	**3E-08**
CHLOROFORM	67-66-3	5.55E-01	Y	6.67E-02	---	9.77E+01	**7E-04**	---	5.72E-03	2.30E-05	**1E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-	**---**
ETHYLBENZENE	100-41-4	7.33E-01	Y	8.81E-02	---	1.00E+03	**9E-05**	---	7.55E-03	2.50E-06	**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	4.05E-01	---	NA	---	---	3.47E-02	2.20E-05	**8E-07**
ISOPROPYL ALCOHOL	67-63-0	2.05E+01	Y	2.46E+00	---	2.00E+02	**1E-02**	---	2.11E-01	-	**---**
M,P-XYLENE	108-38-3	2.76E+00	Y	3.32E-01	---	1.00E+02	**3E-03**	---	2.84E-02	-	**---**
METHYLENE CHLORIDE	75-09-2	5.69E-01	Y	6.84E-02	---	6.00E+02	**1E-04**	---	5.86E-03	1.00E-08	M **3E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	1.98E-01	---	3.00E+00	**7E-02**	---	1.70E-02	3.40E-05	**6E-07**
O-XYLENE	95-47-6	1.44E+00	Y	1.73E-01	---	1.00E+02	**2E-03**	---	1.48E-02	-	**---**
TETRACHLOROETHENE	127-18-4	2.27E+00	Y	2.73E-01	---	4.00E+01	**7E-03**	---	2.34E-02	2.60E-07	**6E-09**
TRICHLOROETHENE	79-01-6	5.95E-02	Y	7.15E-03	---	2.00E+00	**4E-03**	---	6.13E-04	4.10E-06	M **5E-09**
VINYL ACETATE	108-05-4	3.52E-02	N	4.23E-03	---	2.00E+02	**2E-05**	---	3.63E-04	-	**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	3.07E-03	---	8.00E+01	**4E-05**	---	2.63E-04	4.40E-06	M **6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0195H**	**Total Inhalation**	**5E-01**	**0E+00**	**3E-06**
		Based on NDs only	**5E-01**	**0E+00**	**3E-06**
		Based on Detects only	**5E-02**	**All ND**	**3E-07**
		Site-related only	**1E-02**	**0E+00**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0195H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.69E-01	1.95E-02	1.17E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	5.95E-02	2.04E-03	1.23E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	5.95E-02	6.13E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	2.56E-02	8.78E-04	5.27E-04	NA	NA	4.4E-06		4E-09	2E-09	---	---	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0197H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.50E-02	N	3.01E-03	---	NA	---	---	2.58E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	5.00E-02	N	6.01E-03	---	2.00E+00	**3E-03**	---	5.15E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	8.50E-02	N	1.02E-02	---	3.00E+01	**3E-04**	---	8.76E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	1.44E-03	---	2.00E-01	**7E-03**	---	1.24E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	6.01E-02	---	2.00E+00	**3E-02**	---	5.15E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.20E-01	Y	2.65E-02	---	6.00E+01	**4E-04**	---	2.27E-03	-		---
1,2-DIBROMOETHANE	106-93-4	4.45E-02	N	5.35E-03	---	9.00E+00	**6E-04**	---	4.59E-04	6.00E-04		**3E-07**
1,2-DICHLOROETHANE	107-06-2	8.50E-02	Y	1.02E-02	---	7.00E+00	**1E-03**	---	8.76E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	1.20E-02	---	4.00E+00	**3E-03**	---	1.03E-03	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	8.50E-02	N	1.02E-02	---	6.00E+01	**2E-04**	---	8.76E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	2.10E-01	Y	2.53E-02	---	8.00E+02	**3E-05**	---	2.16E-03	1.10E-05		**2E-08**
BENZENE	71-43-2	4.30E-01	Y	5.17E-02	---	3.00E+01	**2E-03**	---	4.43E-03	7.80E-06		**3E-08**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	1.32E-02	---	1.00E+00	**1E-02**	---	1.13E-03	4.90E-05		**6E-08**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	1.32E-02	---	NA	---	---	1.13E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	6.00E-01	N	7.21E-02	---	5.00E+00	**1E-02**	---	6.18E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	5.29E-02	---	1.00E+02	**5E-04**	---	4.53E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.10E+00	Y	1.32E-01	---	9.77E+01	**1E-03**	---	1.13E-02	2.30E-05		**3E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	3.50E-01	Y	4.21E-02	---	1.00E+03	**4E-05**	---	3.61E-03	2.50E-06		**9E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.25E-01	N	5.11E-02	---	NA	---	---	4.38E-03	2.20E-05		**1E-07**
ISOPROPYL ALCOHOL	67-63-0	2.90E+01	Y	3.49E+00	---	2.00E+02	**2E-02**	---	2.99E-01	-		---
M,P-XYLENE	108-38-3	1.20E+00	Y	1.44E-01	---	1.00E+02	**1E-03**	---	1.24E-02	-		---
METHYLENE CHLORIDE	75-09-2	4.80E-01	Y	5.77E-02	---	6.00E+02	**1E-04**	---	4.95E-03	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.10E-01	Y	3.73E-02	---	1.00E+02	**4E-04**	---	3.20E-03	-		---
TETRACHLOROETHENE	127-18-4	2.30E+01	Y	2.77E+00	---	4.00E+01	**7E-02**	---	2.37E-01	2.60E-07		**6E-08**
TRICHLOROETHENE	79-01-6	5.80E+00	Y	6.97E-01	---	2.00E+00	**3E-01**	---	5.98E-02	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	3.95E-03	N	4.75E-04	---	8.00E+01	**6E-06**	---	4.07E-05	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0197H**	**Total Inhalation**	**5E-01**	**0E+00**	**1E-06**
		Based on NDs only	**7E-02**	**0E+00**	**5E-07**
		Based on Detects only	**4E-01**	**All ND**	**9E-07**
		Site-related only	**4E-01**	**0E+00**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0197H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.80E-01	1.65E-02	9.89E-03	NA	NA	1.0E-08		2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	5.80E+00	1.99E-01	1.20E-01	NA	NA	1.0E-06	kidney	2E-07	1E-07	---	---	**3E-07**
TRICHLOROETHENE	79-01-6	5.80E+00	5.98E-02		NA		3.1E-06	NHL+liver	2E-07		---		**2E-07**
VINYL CHLORIDE	75-01-4	3.95E-03	1.36E-04	8.14E-05	NA	NA	4.4E-06		6E-10	4E-10	---	---	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0225H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	8.24E-03	---	NA	---	---	7.06E-04	5.80E-05		**4E-08**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.66E-01	---	2.00E+00	**1E-01**	---	2.28E-02	3.00E-05		**7E-07**
1,4-DIOXANE	123-91-1	3.61E-01	N	4.33E-02	---	3.00E+01	**1E-03**	---	3.72E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	9.80E-03	---	2.00E-01	**5E-02**	---	8.40E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.80E-01	---	2.00E+00	**1E-01**	---	2.40E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	5.90E-02	---	6.00E+01	**1E-03**	---	5.06E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	9.26E-03	---	9.00E+00	**1E-03**	---	7.94E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	3.26E-01	Y	3.92E-02	---	7.00E+00	**6E-03**	---	3.36E-03	2.60E-05		**9E-08**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	8.36E-03	---	4.00E+00	**2E-03**	---	7.16E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	5.90E-02	---	6.00E+01	**1E-03**	---	5.06E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.80E-01	Y	1.18E-01	---	8.00E+02	**1E-04**	---	1.01E-02	1.10E-05		**1E-07**
BENZENE	71-43-2	5.21E-01	Y	6.26E-02	---	3.00E+01	**2E-03**	---	5.37E-03	7.80E-06		**4E-08**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	6.25E-02	---	1.00E+00	**6E-02**	---	5.36E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	8.06E-02	---	NA	---	---	6.91E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	3.88E-01	N	4.67E-02	---	5.00E+00	**9E-03**	---	4.00E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	6.87E-01	Y	8.26E-02	---	1.00E+02	**8E-04**	---	7.08E-03	6.00E-06		**4E-08**
CHLOROFORM	67-66-3	3.59E-01	Y	4.32E-02	---	9.77E+01	**4E-04**	---	3.70E-03	2.30E-05		**9E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	6.29E-01	Y	7.56E-02	---	1.00E+03	**8E-05**	---	6.48E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	4.05E-01	---	NA	---	---	3.47E-02	2.20E-05		**8E-07**
ISOPROPYL ALCOHOL	67-63-0	1.24E+01	Y	1.49E+00	---	2.00E+02	**7E-03**	---	1.28E-01	-		**---**
M,P-XYLENE	108-38-3	2.17E+00	Y	2.61E-01	---	1.00E+02	**3E-03**	---	2.24E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	7.43E-01	Y	8.93E-02	---	6.00E+02	**1E-04**	---	7.66E-03	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	1.98E-01	---	3.00E+00	**7E-02**	---	1.70E-02	3.40E-05		**6E-07**
O-XYLENE	95-47-6	7.24E-01	Y	8.71E-02	---	1.00E+02	**9E-04**	---	7.46E-03	-		**---**
TETRACHLOROETHENE	127-18-4	2.57E-01	Y	3.09E-02	---	4.00E+01	**8E-04**	---	2.65E-03	2.60E-07		**7E-10**
TRICHLOROETHENE	79-01-6	6.54E-02	Y	7.86E-03	---	2.00E+00	**4E-03**	---	6.74E-04	4.10E-06	M	**6E-09**
VINYL ACETATE	108-05-4	3.52E-02	N	4.23E-03	---	2.00E+02	**2E-05**	---	3.63E-04	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	3.07E-03	---	8.00E+01	**4E-05**	---	2.63E-04	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0225H**	**Total Inhalation**	**5E-01**	**0E+00**	**3E-06**
		Based on NDs only	**5E-01**	**0E+00**	**3E-06**
		Based on Detects only	**2E-02**	**All ND**	**4E-07**
		Site-related only	**6E-03**	**0E+00**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0225H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.43E-01	2.55E-02	1.53E-02	NA	NA	1.0E-08		3E-10	2E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	6.54E-02	2.25E-03	1.35E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**4E-09**
TRICHLOROETHENE	79-01-6	6.54E-02	6.74E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	2.56E-02	8.78E-04	5.27E-04	NA	NA	4.4E-06		4E-09	2E-09	---	---	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0230H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	1.26E-03	---	NA	---	---	1.08E-04	5.80E-05		**6E-09**
1,3-BUTADIENE	106-99-0	4.95E-02	N	5.95E-03	---	2.00E+00	**3E-03**	---	5.10E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	7.00E-02	N	8.42E-03	---	3.00E+01	**3E-04**	---	7.21E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	8.42E-04	---	2.00E-01	**4E-03**	---	7.21E-05	1.60E-05		**1E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.85E-01	N	5.83E-02	---	2.00E+00	**3E-02**	---	5.00E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.90E-01	Y	2.28E-02	---	6.00E+01	**4E-04**	---	1.96E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	3.97E-03	---	9.00E+00	**4E-04**	---	3.40E-04	6.00E-04		**2E-07**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	1.68E-02	---	7.00E+00	**2E-03**	---	1.44E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	1.08E-02	---	4.00E+00	**3E-03**	---	9.28E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	7.21E-03	---	6.00E+01	**1E-04**	---	6.18E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	6.01E-03	---	8.00E+02	**8E-06**	---	5.15E-04	1.10E-05		**6E-09**
BENZENE	71-43-2	5.30E-01	Y	6.37E-02	---	3.00E+01	**2E-03**	---	5.46E-03	7.80E-06		**4E-08**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	1.02E-02	---	1.00E+00	**1E-02**	---	8.76E-04	4.90E-05		**4E-08**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	1.50E-02	---	NA	---	---	1.29E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	6.50E-01	N	7.82E-02	---	5.00E+00	**2E-02**	---	6.70E-03	-		---
CARBON TETRACHLORIDE	56-23-5	3.90E-01	Y	4.69E-02	---	1.00E+02	**5E-04**	---	4.02E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	9.60E-01	Y	1.15E-01	---	9.77E+01	**1E-03**	---	9.89E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.50E-01	Y	1.80E-02	---	1.00E+03	**2E-05**	---	1.55E-03	2.50E-06		**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	7.82E-02	---	NA	---	---	6.70E-03	2.20E-05		**1E-07**
ISOPROPYL ALCOHOL	67-63-0	5.50E+01	Y	6.61E+00	---	2.00E+02	**3E-02**	---	5.67E-01	-		---
M,P-XYLENE	108-38-3	5.20E-01	Y	6.25E-02	---	1.00E+02	**6E-04**	---	5.36E-03	-		---
METHYLENE CHLORIDE	75-09-2	2.75E-01	N	3.31E-02	---	6.00E+02	**6E-05**	---	2.83E-03	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.00E-01	Y	2.40E-02	---	1.00E+02	**2E-04**	---	2.06E-03	-		---
TETRACHLOROETHENE	127-18-4	4.80E-02	Y	5.77E-03	---	4.00E+01	**1E-04**	---	4.95E-04	2.60E-07		**1E-10**
TRICHLOROETHENE	79-01-6	1.65E-02	N	1.98E-03	---	2.00E+00	**1E-03**	---	1.70E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.00E-03	N	9.62E-04	---	8.00E+01	**1E-05**	---	8.25E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0230H**	**Total Inhalation**	**1E-01**	**0E+00**	**8E-07**
		Based on NDs only	**7E-02**	**0E+00**	**5E-07**
		Based on Detects only	**4E-02**	**All ND**	**3E-07**
		Site-related only	**1E-03**	**0E+00**	**7E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0230H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.75E-01	9.45E-03	5.67E-03	NA	NA	1.0E-08		9E-11	6E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	1.65E-02	5.67E-04	3.40E-04	NA	NA	1.0E-06	kidney	6E-10	3E-10	---	---	**9E-10**
TRICHLOROETHENE	79-01-6	1.65E-02	1.70E-04		NA		3.1E-06	NHL+liver	5E-10		---		**5E-10**
VINYL CHLORIDE	75-01-4	8.00E-03	2.75E-04	1.65E-04	NA	NA	4.4E-06		1E-09	7E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0255H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	8.24E-03	---	NA	---	---	7.06E-04	5.80E-05		**4E-08**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.66E-01	---	2.00E+00	**1E-01**	---	2.28E-02	3.00E-05		**7E-07**
1,4-DIOXANE	123-91-1	3.61E-01	N	4.33E-02	---	3.00E+01	**1E-03**	---	3.72E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	9.80E-03	---	2.00E-01	**5E-02**	---	8.40E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.80E-01	---	2.00E+00	**1E-01**	---	2.40E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	5.90E-02	---	6.00E+01	**1E-03**	---	5.06E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	9.26E-03	---	9.00E+00	**1E-03**	---	7.94E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	1.41E-01	Y	1.70E-02	---	7.00E+00	**2E-03**	---	1.45E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	8.36E-03	---	4.00E+00	**2E-03**	---	7.16E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	5.90E-02	---	6.00E+01	**1E-03**	---	5.06E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.77E-02	Y	6.94E-03	---	8.00E+02	**9E-06**	---	5.95E-04	1.10E-05		**7E-09**
BENZENE	71-43-2	6.71E-01	Y	8.07E-02	---	3.00E+01	**3E-03**	---	6.92E-03	7.80E-06		**5E-08**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	6.25E-02	---	1.00E+00	**6E-02**	---	5.36E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	8.06E-02	---	NA	---	---	6.91E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	3.88E-01	N	4.67E-02	---	5.00E+00	**9E-03**	---	4.00E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.87E-01	Y	5.86E-02	---	1.00E+02	**6E-04**	---	5.02E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.47E+00	Y	1.77E-01	---	9.77E+01	**2E-03**	---	1.52E-02	2.30E-05		**3E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.02E-01	Y	2.43E-02	---	1.00E+03	**2E-05**	---	2.08E-03	2.50E-06		**5E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	4.05E-01	---	NA	---	---	3.47E-02	2.20E-05		**8E-07**
ISOPROPYL ALCOHOL	67-63-0	2.15E+00	Y	2.59E-01	---	2.00E+02	**1E-03**	---	2.22E-02	-		**---**
M,P-XYLENE	108-38-3	8.65E-01	N	1.04E-01	---	1.00E+02	**1E-03**	---	8.92E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	8.82E-01	Y	1.06E-01	---	6.00E+02	**2E-04**	---	9.09E-03	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	1.98E-01	---	3.00E+00	**7E-02**	---	1.70E-02	3.40E-05		**6E-07**
O-XYLENE	95-47-6	4.34E-01	N	5.21E-02	---	1.00E+02	**5E-04**	---	4.47E-03	-		**---**
TETRACHLOROETHENE	127-18-4	2.69E+00	Y	3.23E-01	---	4.00E+01	**8E-03**	---	2.77E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	1.91E-01	Y	2.30E-02	---	2.00E+00	**1E-02**	---	1.97E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	4.23E-03	---	2.00E+02	**2E-05**	---	3.63E-04	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	3.07E-03	---	8.00E+01	**4E-05**	---	2.63E-04	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0255H**	**Total Inhalation**	**5E-01**	**0E+00**	**4E-06**
		Based on NDs only	**5E-01**	**0E+00**	**3E-06**
		Based on Detects only	**3E-02**	**All ND**	**5E-07**
		Site-related only	**2E-02**	**0E+00**	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0255H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.82E-01	3.03E-02	1.82E-02	NA	NA	1.0E-08		3E-10	2E-10	---	---	**5E-10**
TRICHLOROETHENE	79-01-6	1.91E-01	6.56E-03	3.94E-03	NA	NA	1.0E-06	kidney	7E-09	4E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	1.91E-01	1.97E-03		NA		3.1E-06	NHL+liver	6E-09		---		**6E-09**
VINYL CHLORIDE	75-01-4	2.56E-02	8.78E-04	5.27E-04	NA	NA	4.4E-06		4E-09	2E-09	---	---	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0256H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	8.24E-03	---	NA	---	---	7.06E-04	5.80E-05		**4E-08**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.66E-01	---	2.00E+00	**1E-01**	---	2.28E-02	3.00E-05		**7E-07**
1,4-DIOXANE	123-91-1	3.61E-01	N	4.33E-02	---	3.00E+01	**1E-03**	---	3.72E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	9.80E-03	---	2.00E-01	**5E-02**	---	8.40E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.80E-01	---	2.00E+00	**1E-01**	---	2.40E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	5.90E-02	---	6.00E+01	**1E-03**	---	5.06E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	9.26E-03	---	9.00E+00	**1E-03**	---	7.94E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	1.04E-01	Y	1.25E-02	---	7.00E+00	**2E-03**	---	1.07E-03	2.60E-05		**3E-08**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	8.36E-03	---	4.00E+00	**2E-03**	---	7.16E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	5.90E-02	---	6.00E+01	**1E-03**	---	5.06E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	6.91E-02	Y	8.31E-03	---	8.00E+02	**1E-05**	---	7.12E-04	1.10E-05		**8E-09**
BENZENE	71-43-2	5.72E-01	Y	6.88E-02	---	3.00E+01	**2E-03**	---	5.90E-03	7.80E-06		**5E-08**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	6.25E-02	---	1.00E+00	**6E-02**	---	5.36E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	8.06E-02	---	NA	---	---	6.91E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	3.88E-01	N	4.67E-02	---	5.00E+00	**9E-03**	---	4.00E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.86E-01	Y	5.84E-02	---	1.00E+02	**6E-04**	---	5.01E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	3.49E-01	Y	4.20E-02	---	9.77E+01	**4E-04**	---	3.60E-03	2.30E-05		**8E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.68E-01	Y	2.02E-02	---	1.00E+03	**2E-05**	---	1.73E-03	2.50E-06		**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	4.05E-01	---	NA	---	---	3.47E-02	2.20E-05		**8E-07**
ISOPROPYL ALCOHOL	67-63-0	2.07E+00	Y	2.49E-01	---	2.00E+02	**1E-03**	---	2.13E-02	-		---
M,P-XYLENE	108-38-3	6.85E-01	Y	8.24E-02	---	1.00E+02	**8E-04**	---	7.06E-03	-		---
METHYLENE CHLORIDE	75-09-2	6.77E-01	Y	8.14E-02	---	6.00E+02	**1E-04**	---	6.98E-03	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	1.98E-01	---	3.00E+00	**7E-02**	---	1.70E-02	3.40E-05		**6E-07**
O-XYLENE	95-47-6	4.34E-01	N	5.21E-02	---	1.00E+02	**5E-04**	---	4.47E-03	-		---
TETRACHLOROETHENE	127-18-4	1.84E-01	Y	2.21E-02	---	4.00E+01	**6E-04**	---	1.90E-03	2.60E-07		**5E-10**
TRICHLOROETHENE	79-01-6	6.16E-02	Y	7.41E-03	---	2.00E+00	**4E-03**	---	6.35E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	3.52E-02	N	4.23E-03	---	2.00E+02	**2E-05**	---	3.63E-04	-		---
VINYL CHLORIDE	75-01-4	2.56E-02	N	3.07E-03	---	8.00E+01	**4E-05**	---	2.63E-04	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0256H**	**Total Inhalation**	**5E-01**	**0E+00**	**3E-06**
		Based on NDs only	**5E-01**	**0E+00**	**3E-06**
		Based on Detects only	**1E-02**	**All ND**	**2E-07**
		Site-related only	**6E-03**	**0E+00**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0256H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.77E-01	2.33E-02	1.40E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	6.16E-02	2.12E-03	1.27E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	6.16E-02	6.35E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	2.56E-02	8.78E-04	5.27E-04	NA	NA	4.4E-06		4E-09	2E-09	---	---	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0263H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	8.24E-03	---	NA	---	---	7.06E-04	5.80E-05		**4E-08**
1,3-BUTADIENE	106-99-0	2.22E+01	N	2.66E+00	---	2.00E+00	**1E+00**	---	2.28E-01	3.00E-05		**7E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	4.33E-02	---	3.00E+01	**1E-03**	---	3.72E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	9.80E-03	---	2.00E-01	**5E-02**	---	8.40E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.80E-01	---	2.00E+00	**1E-01**	---	2.40E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.53E-01	Y	7.85E-02	---	6.00E+01	**1E-03**	---	6.73E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	9.26E-03	---	9.00E+00	**1E-03**	---	7.94E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	2.88E-01	Y	3.46E-02	---	7.00E+00	**5E-03**	---	2.97E-03	2.60E-05		**8E-08**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	8.36E-03	---	4.00E+00	**2E-03**	---	7.16E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	5.90E-02	---	6.00E+01	**1E-03**	---	5.06E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.13E-02	Y	7.37E-03	---	8.00E+02	**9E-06**	---	6.32E-04	1.10E-05		**7E-09**
BENZENE	71-43-2	1.24E+00	Y	1.49E-01	---	3.00E+01	**5E-03**	---	1.28E-02	7.80E-06		**1E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	6.25E-02	---	1.00E+00	**6E-02**	---	5.36E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	8.06E-02	---	NA	**---**	---	6.91E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	3.88E+00	N	4.67E-01	---	5.00E+00	**9E-02**	---	4.00E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.94E-01	Y	7.14E-02	---	1.00E+02	**7E-04**	---	6.12E-03	6.00E-06		**4E-08**
CHLOROFORM	67-66-3	4.87E-02	N	5.85E-03	---	9.77E+01	**6E-05**	---	5.01E-04	2.30E-05		**1E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	---	---	-		**---**
ETHYLBENZENE	100-41-4	6.63E-01	Y	7.97E-02	---	1.00E+03	**8E-05**	---	6.83E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	4.05E-01	---	NA	**---**	---	3.47E-02	2.20E-05		**8E-07**
ISOPROPYL ALCOHOL	67-63-0	1.54E+01	N	1.85E+00	---	2.00E+02	**9E-03**	---	1.58E-01	-		**---**
M,P-XYLENE	108-38-3	1.63E+00	Y	1.96E-01	---	1.00E+02	**2E-03**	---	1.68E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	3.47E+00	N	4.17E-01	---	6.00E+02	**7E-04**	---	3.58E-02	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.98E-01	---	3.00E+00	**7E-02**	---	1.70E-02	3.40E-05		**6E-07**
O-XYLENE	95-47-6	6.16E-01	Y	7.41E-02	---	1.00E+02	**7E-04**	---	6.35E-03	-		**---**
TETRACHLOROETHENE	127-18-4	1.26E+01	Y	1.52E+00	---	4.00E+01	**4E-02**	---	1.30E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	5.79E-01	Y	6.96E-02	---	2.00E+00	**3E-02**	---	5.97E-03	4.10E-06	M	**5E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	4.23E-03	---	2.00E+02	**2E-05**	---	3.63E-04	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	3.07E-03	---	8.00E+01	**4E-05**	---	2.63E-04	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0263H**	**Total Inhalation**	**2E+00**	**0E+00**	**1E-05**
		Based on NDs only	**2E+00**	**0E+00**	**9E-06**
		Based on Detects only	**9E-02**	**All ND**	**3E-07**
		Site-related only	**7E-02**	**0E+00**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0263H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.47E+00	1.19E-01	7.15E-02	NA	NA	1.0E-08		1E-09	7E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	5.79E-01	1.99E-02	1.19E-02	NA	NA	1.0E-06	kidney	2E-08	1E-08	---	---	**3E-08**
TRICHLOROETHENE	79-01-6	5.79E-01	5.97E-03		NA		3.1E-06	NHL+liver	2E-08		---		**2E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	8.78E-04	5.27E-04	NA	NA	4.4E-06		4E-09	2E-09	---	---	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0273H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.15E-02	N	1.38E-03	---	NA	---	---	1.19E-04	5.80E-05		**7E-09**
1,3-BUTADIENE	106-99-0	5.50E-02	N	6.61E-03	---	2.00E+00	**3E-03**	---	5.67E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	7.50E-02	N	9.02E-03	---	3.00E+01	**3E-04**	---	7.73E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	9.02E-04	---	2.00E-01	**5E-03**	---	7.73E-05	1.60E-05		**1E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	6.01E-02	---	2.00E+00	**3E-02**	---	5.15E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.90E-01	Y	7.09E-02	---	6.00E+01	**1E-03**	---	6.08E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.55E-02	N	4.27E-03	---	9.00E+00	**5E-04**	---	3.66E-04	6.00E-04		**2E-07**
1,2-DICHLOROETHANE	107-06-2	1.60E-01	Y	1.92E-02	---	7.00E+00	**3E-03**	---	1.65E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	1.20E-02	---	4.00E+00	**3E-03**	---	1.03E-03	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	2.10E-01	Y	2.53E-02	---	6.00E+01	**4E-04**	---	2.16E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	6.61E-03	---	8.00E+02	**8E-06**	---	5.67E-04	1.10E-05		**6E-09**
BENZENE	71-43-2	4.50E-01	Y	5.41E-02	---	3.00E+01	**2E-03**	---	4.64E-03	7.80E-06		**4E-08**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	1.08E-02	---	1.00E+00	**1E-02**	---	9.28E-04	4.90E-05		**5E-08**
BROMODICHLOROMETHANE	75-27-4	1.35E-01	N	1.62E-02	---	NA	---	---	1.39E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	7.00E-01	N	8.42E-02	---	5.00E+00	**2E-02**	---	7.21E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	4.81E-02	---	1.00E+02	**5E-04**	---	4.12E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	5.30E-01	Y	6.37E-02	---	9.77E+01	**7E-04**	---	5.46E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.50E-01	Y	1.80E-02	---	1.00E+03	**2E-05**	---	1.55E-03	2.50E-06		**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	8.42E-02	---	NA	---	---	7.21E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	2.30E+01	Y	2.77E+00	---	2.00E+02	**1E-02**	---	2.37E-01	-		---
M,P-XYLENE	108-38-3	5.10E-01	Y	6.13E-02	---	1.00E+02	**6E-04**	---	5.26E-03	-		---
METHYLENE CHLORIDE	75-09-2	2.30E-01	N	2.77E-02	---	6.00E+02	**5E-05**	---	2.37E-03	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.70E-01	Y	2.04E-02	---	1.00E+02	**2E-04**	---	1.75E-03	-		---
TETRACHLOROETHENE	127-18-4	2.70E+00	Y	3.25E-01	---	4.00E+01	**8E-03**	---	2.78E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	1.75E-02	N	2.10E-03	---	2.00E+00	**1E-03**	---	1.80E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.50E-03	N	1.02E-03	---	8.00E+01	**1E-05**	---	8.76E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0273H**	**Total Inhalation**	**1E-01**	**0E+00**	**8E-07**
		Based on NDs only	**7E-02**	**0E+00**	**5E-07**
		Based on Detects only	**3E-02**	**All ND**	**2E-07**
		Site-related only	**9E-03**	**0E+00**	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0273H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.30E-01	7.90E-03	4.74E-03	NA	NA	1.0E-08		8E-11	5E-11	---	---	**1E-10**
TRICHLOROETHENE	79-01-6	1.75E-02	6.01E-04	3.61E-04	NA	NA	1.0E-06	kidney	6E-10	4E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	1.75E-02	1.80E-04		NA		3.1E-06	NHL+liver	6E-10		---		**6E-10**
VINYL CHLORIDE	75-01-4	8.50E-03	2.92E-04	1.75E-04	NA	NA	4.4E-06		1E-09	8E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0274H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-02	N	2.89E-03	---	NA	---	---	2.47E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	4.90E-02	N	5.89E-03	---	2.00E+00	**3E-03**	---	5.05E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	8.00E-02	N	9.62E-03	---	3.00E+01	**3E-04**	---	8.25E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	1.44E-03	---	2.00E-01	**7E-03**	---	1.24E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.95E-01	N	5.95E-02	---	2.00E+00	**3E-02**	---	5.10E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E-01	Y	1.92E-02	---	6.00E+01	**3E-04**	---	1.65E-03	-		---
1,2-DIBROMOETHANE	106-93-4	4.30E-02	N	5.17E-03	---	9.00E+00	**6E-04**	---	4.43E-04	6.00E-04		**3E-07**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	1.68E-02	---	7.00E+00	**2E-03**	---	1.44E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	1.14E-02	---	4.00E+00	**3E-03**	---	9.79E-04	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	8.00E-02	N	9.62E-03	---	6.00E+01	**2E-04**	---	8.25E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	4.55E-02	N	5.47E-03	---	8.00E+02	**7E-06**	---	4.69E-04	1.10E-05		**5E-09**
BENZENE	71-43-2	3.60E-01	Y	4.33E-02	---	3.00E+01	**1E-03**	---	3.71E-03	7.80E-06		**3E-08**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	1.26E-02	---	1.00E+00	**1E-02**	---	1.08E-03	4.90E-05		**5E-08**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	1.32E-02	---	NA	---	---	1.13E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	6.00E-01	N	7.21E-02	---	5.00E+00	**1E-02**	---	6.18E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	4.93E-02	---	1.00E+02	**5E-04**	---	4.23E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	5.10E-01	Y	6.13E-02	---	9.77E+01	**6E-04**	---	5.26E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.60E+00	Y	1.92E-01	---	1.00E+03	**2E-04**	---	1.65E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.10E-01	N	4.93E-02	---	NA	---	---	4.23E-03	2.20E-05		**9E-08**
ISOPROPYL ALCOHOL	67-63-0	4.40E+01	Y	5.29E+00	---	2.00E+02	**3E-02**	---	4.53E-01	-		---
M,P-XYLENE	108-38-3	6.20E+00	Y	7.46E-01	---	1.00E+02	**7E-03**	---	6.39E-02	-		---
METHYLENE CHLORIDE	75-09-2	6.20E-01	Y	7.46E-02	---	6.00E+02	**1E-04**	---	6.39E-03	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.40E+00	Y	1.68E-01	---	1.00E+02	**2E-03**	---	1.44E-02	-		---
TETRACHLOROETHENE	127-18-4	1.20E+01	Y	1.44E+00	---	4.00E+01	**4E-02**	---	1.24E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	3.50E-02	Y	4.21E-03	---	2.00E+00	**2E-03**	---	3.61E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	3.80E-03	N	4.57E-04	---	8.00E+01	**6E-06**	---	3.92E-05	4.40E-06	M	**9E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0274H**	**Total Inhalation**	**2E-01**	**0E+00**	**8E-07**
		Based on NDs only	**7E-02**	**0E+00**	**5E-07**
		Based on Detects only	**8E-02**	**All ND**	**3E-07**
		Site-related only	**4E-02**	**0E+00**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0274H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.20E-01	2.13E-02	1.28E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	3.50E-02	1.20E-03	7.21E-04	NA	NA	1.0E-06	kidney	1E-09	7E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	3.50E-02	3.61E-04		NA		3.1E-06	NHL+liver	1E-09		---		**1E-09**
VINYL CHLORIDE	75-01-4	3.80E-03	1.31E-04	7.83E-05	NA	NA	4.4E-06		6E-10	3E-10	---	---	**9E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0277H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.15E-02	N	1.38E-03	---	NA	---	---	1.19E-04	5.80E-05		**7E-09**
1,3-BUTADIENE	106-99-0	5.00E-02	N	6.01E-03	---	2.00E+00	**3E-03**	---	5.15E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	7.50E-02	N	9.02E-03	---	3.00E+01	**3E-04**	---	7.73E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	9.02E-04	---	2.00E-01	**5E-03**	---	7.73E-05	1.60E-05		**1E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	6.01E-02	---	2.00E+00	**3E-02**	---	5.15E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E-01	Y	1.44E-02	---	6.00E+01	**2E-04**	---	1.24E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.50E-02	N	4.21E-03	---	9.00E+00	**5E-04**	---	3.61E-04	6.00E-04		**2E-07**
1,2-DICHLOROETHANE	107-06-2	2.60E-01	Y	3.13E-02	---	7.00E+00	**4E-03**	---	2.68E-03	2.60E-05		**7E-08**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	1.20E-02	---	4.00E+00	**3E-03**	---	1.03E-03	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	6.50E-02	N	7.82E-03	---	6.00E+01	**1E-04**	---	6.70E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	6.61E-03	---	8.00E+02	**8E-06**	---	5.67E-04	1.10E-05		**6E-09**
BENZENE	71-43-2	4.00E-01	Y	4.81E-02	---	3.00E+01	**2E-03**	---	4.12E-03	7.80E-06		**3E-08**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	1.08E-02	---	1.00E+00	**1E-02**	---	9.28E-04	4.90E-05		**5E-08**
BROMODICHLOROMETHANE	75-27-4	1.35E-01	N	1.62E-02	---	NA	---	---	1.39E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	7.00E-01	N	8.42E-02	---	5.00E+00	**2E-02**	---	7.21E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	4.81E-02	---	1.00E+02	**5E-04**	---	4.12E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	4.90E-01	Y	5.89E-02	---	9.77E+01	**6E-04**	---	5.05E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.40E-01	Y	2.89E-02	---	1.00E+03	**3E-05**	---	2.47E-03	2.50E-06		**6E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	8.42E-02	---	NA	---	---	7.21E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	8.00E+00	Y	9.62E-01	---	2.00E+02	**5E-03**	---	8.25E-02	-		---
M,P-XYLENE	108-38-3	9.00E-01	Y	1.08E-01	---	1.00E+02	**1E-03**	---	9.28E-03	-		---
METHYLENE CHLORIDE	75-09-2	3.40E+00	Y	4.09E-01	---	6.00E+02	**7E-04**	---	3.50E-02	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.60E-01	Y	3.13E-02	---	1.00E+02	**3E-04**	---	2.68E-03	-		---
TETRACHLOROETHENE	127-18-4	5.00E+00	Y	6.01E-01	---	4.00E+01	**2E-02**	---	5.15E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	1.75E-02	N	2.10E-03	---	2.00E+00	**1E-03**	---	1.80E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.50E-03	N	1.02E-03	---	8.00E+01	**1E-05**	---	8.76E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0277H**	**Total Inhalation**	**1E-01**	**0E+00**	**8E-07**
		Based on NDs only	**7E-02**	**0E+00**	**5E-07**
		Based on Detects only	**3E-02**	**All ND**	**3E-07**
		Site-related only	**2E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0277H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.40E+00	1.17E-01	7.01E-02	NA	NA	1.0E-08		1E-09	7E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	1.75E-02	6.01E-04	3.61E-04	NA	NA	1.0E-06	kidney	6E-10	4E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	1.75E-02	1.80E-04		NA		3.1E-06	NHL+liver	6E-10		---		**6E-10**
VINYL CHLORIDE	75-01-4	8.50E-03	2.92E-04	1.75E-04	NA	NA	4.4E-06		1E-09	8E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0302H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00E-02	N	1.20E-03	---	NA	---	---	1.03E-04	5.80E-05		**6E-09**
1,3-BUTADIENE	106-99-0	4.65E-02	N	5.59E-03	---	2.00E+00	**3E-03**	---	4.79E-04	3.00E-05		**1E-08**
1,4-DIOXANE	123-91-1	7.00E-02	N	8.42E-03	---	3.00E+01	**3E-04**	---	7.21E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	6.50E-03	N	7.82E-04	---	2.00E-01	**4E-03**	---	6.70E-05	1.60E-05		**1E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.55E-01	N	5.47E-02	---	2.00E+00	**3E-02**	---	4.69E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E-01	Y	1.92E-02	---	6.00E+01	**3E-04**	---	1.65E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.10E-02	N	3.73E-03	---	9.00E+00	**4E-04**	---	3.20E-04	6.00E-04		**2E-07**
1,2-DICHLOROETHANE	107-06-2	9.80E-02	Y	1.18E-02	---	7.00E+00	**2E-03**	---	1.01E-03	2.60E-05		**3E-08**
1,2-DICHLOROPROPANE	78-87-5	8.50E-02	N	1.02E-02	---	4.00E+00	**3E-03**	---	8.76E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	5.50E-02	N	6.61E-03	---	6.00E+01	**1E-04**	---	5.67E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	4.90E-02	N	5.89E-03	---	8.00E+02	**7E-06**	---	5.05E-04	1.10E-05		**6E-09**
BENZENE	71-43-2	4.80E-01	Y	5.77E-02	---	3.00E+01	**2E-03**	---	4.95E-03	7.80E-06		**4E-08**
BENZYL CHLORIDE	100-44-7	8.00E-02	N	9.62E-03	---	1.00E+00	**1E-02**	---	8.25E-04	4.90E-05		**4E-08**
BROMODICHLOROMETHANE	75-27-4	1.20E-01	N	1.44E-02	---	NA	---	---	1.24E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	6.00E-01	N	7.21E-02	---	5.00E+00	**1E-02**	---	6.18E-03	-		---
CARBON TETRACHLORIDE	56-23-5	3.90E-01	Y	4.69E-02	---	1.00E+02	**5E-04**	---	4.02E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	3.70E-01	Y	4.45E-02	---	9.77E+01	**5E-04**	---	3.81E-03	2.30E-05		**9E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.30E-01	Y	1.56E-02	---	1.00E+03	**2E-05**	---	1.34E-03	2.50E-06		**3E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.00E-01	N	7.21E-02	---	NA	---	---	6.18E-03	2.20E-05		**1E-07**
ISOPROPYL ALCOHOL	67-63-0	1.50E+01	Y	1.80E+00	---	2.00E+02	**9E-03**	---	1.55E-01	-		---
M,P-XYLENE	108-38-3	5.40E-01	Y	6.49E-02	---	1.00E+02	**6E-04**	---	5.57E-03	-		---
METHYLENE CHLORIDE	75-09-2	2.50E-01	N	3.01E-02	---	6.00E+02	**5E-05**	---	2.58E-03	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.70E-01	Y	3.25E-02	---	1.00E+02	**3E-04**	---	2.78E-03	-		---
TETRACHLOROETHENE	127-18-4	3.40E-01	Y	4.09E-02	---	4.00E+01	**1E-03**	---	3.50E-03	2.60E-07		**9E-10**
TRICHLOROETHENE	79-01-6	1.55E-02	N	1.86E-03	---	2.00E+00	**9E-04**	---	1.60E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	7.50E-03	N	9.02E-04	---	8.00E+01	**1E-05**	---	7.73E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0302H**	**Total Inhalation**	**8E-02**	**0E+00**	**6E-07**
		Based on NDs only	**6E-02**	**0E+00**	**5E-07**
		Based on Detects only	**2E-02**	**All ND**	**2E-07**
		Site-related only	**2E-03**	**0E+00**	**8E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0302H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.50E-01	8.59E-03	5.15E-03	NA	NA	1.0E-08		9E-11	5E-11	---	---	**1E-10**
TRICHLOROETHENE	79-01-6	1.55E-02	5.33E-04	3.20E-04	NA	NA	1.0E-06	kidney	5E-10	3E-10	---	---	**9E-10**
TRICHLOROETHENE	79-01-6	1.55E-02	1.60E-04		NA		3.1E-06	NHL+liver	5E-10		---		**5E-10**
VINYL CHLORIDE	75-01-4	7.50E-03	2.58E-04	1.55E-04	NA	NA	4.4E-06		1E-09	7E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0315H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	1.32E-03	---	NA	---	---	1.13E-04	5.80E-05		**7E-09**
1,3-BUTADIENE	106-99-0	5.00E-02	N	6.01E-03	---	2.00E+00	**3E-03**	---	5.15E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	7.50E-02	N	9.02E-03	---	3.00E+01	**3E-04**	---	7.73E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	8.42E-04	---	2.00E-01	**4E-03**	---	7.21E-05	1.60E-05		**1E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	6.01E-02	---	2.00E+00	**3E-02**	---	5.15E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.50E-02	N	6.61E-03	---	6.00E+01	**1E-04**	---	5.67E-04	-		---
1,2-DIBROMOETHANE	106-93-4	3.45E-02	N	4.15E-03	---	9.00E+00	**5E-04**	---	3.56E-04	6.00E-04		**2E-07**
1,2-DICHLOROETHANE	107-06-2	1.30E-01	Y	1.56E-02	---	7.00E+00	**2E-03**	---	1.34E-03	2.60E-05		**3E-08**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	1.14E-02	---	4.00E+00	**3E-03**	---	9.79E-04	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	7.21E-03	---	6.00E+01	**1E-04**	---	6.18E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	6.61E-03	---	8.00E+02	**8E-06**	---	5.67E-04	1.10E-05		**6E-09**
BENZENE	71-43-2	4.30E-01	Y	5.17E-02	---	3.00E+01	**2E-03**	---	4.43E-03	7.80E-06		**3E-08**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	1.08E-02	---	1.00E+00	**1E-02**	---	9.28E-04	4.90E-05		**5E-08**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	1.56E-02	---	NA	---	---	1.34E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	7.00E-01	N	8.42E-02	---	5.00E+00	**2E-02**	---	7.21E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	4.81E-02	---	1.00E+02	**5E-04**	---	4.12E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	3.90E-01	Y	4.69E-02	---	9.77E+01	**5E-04**	---	4.02E-03	2.30E-05		**9E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.40E-01	Y	1.68E-02	---	1.00E+03	**2E-05**	---	1.44E-03	2.50E-06		**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	8.42E-02	---	NA	---	---	7.21E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	1.70E+01	Y	2.04E+00	---	2.00E+02	**1E-02**	---	1.75E-01	-		---
M,P-XYLENE	108-38-3	4.40E-01	Y	5.29E-02	---	1.00E+02	**5E-04**	---	4.53E-03	-		---
METHYLENE CHLORIDE	75-09-2	2.60E-01	N	3.13E-02	---	6.00E+02	**5E-05**	---	2.68E-03	1.00E-08	M	**1E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.40E-01	Y	1.68E-02	---	1.00E+02	**2E-04**	---	1.44E-03	-		---
TETRACHLOROETHENE	127-18-4	2.30E+00	Y	2.77E-01	---	4.00E+01	**7E-03**	---	2.37E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	3.49E-02	---	2.00E+00	**2E-02**	---	2.99E-03	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.50E-03	N	1.02E-03	---	8.00E+01	**1E-05**	---	8.76E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0315H**	**Total Inhalation**	**1E-01**	**0E+00**	**7E-07**
		Based on NDs only	**7E-02**	**0E+00**	**5E-07**
		Based on Detects only	**4E-02**	**All ND**	**2E-07**
		Site-related only	**2E-02**	**0E+00**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0315H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.60E-01	8.93E-03	5.36E-03	NA	NA	1.0E-08		9E-11	5E-11	---	---	**1E-10**
TRICHLOROETHENE	79-01-6	2.90E-01	9.96E-03	5.98E-03	NA	NA	1.0E-06	kidney	1E-08	6E-09	---	---	**2E-08**
TRICHLOROETHENE	79-01-6	2.90E-01	2.99E-03		NA		3.1E-06	NHL+liver	9E-09		---		**9E-09**
VINYL CHLORIDE	75-01-4	8.50E-03	2.92E-04	1.75E-04	NA	NA	4.4E-06		1E-09	8E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0329H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-02	N	2.89E-03	---	NA	---	---	2.47E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	4.90E-02	N	5.89E-03	---	2.00E+00	**3E-03**	---	5.05E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	8.00E-02	N	9.62E-03	---	3.00E+01	**3E-04**	---	8.25E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	1.44E-03	---	2.00E-01	**7E-03**	---	1.24E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.95E-01	N	5.95E-02	---	2.00E+00	**3E-02**	---	5.10E-03	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	3.40E-01	Y	4.09E-02	---	6.00E+01	**7E-04**	---	3.50E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.30E-02	N	5.17E-03	---	9.00E+00	**6E-04**	---	4.43E-04	6.00E-04		**3E-07**
1,2-DICHLOROETHANE	107-06-2	7.20E-02	Y	8.66E-03	---	7.00E+00	**1E-03**	---	7.42E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	1.14E-02	---	4.00E+00	**3E-03**	---	9.79E-04	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	8.00E-02	N	9.62E-03	---	6.00E+01	**2E-04**	---	8.25E-04	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.55E-02	N	5.47E-03	---	8.00E+02	**7E-06**	---	4.69E-04	1.10E-05		**5E-09**
BENZENE	71-43-2	3.80E-01	Y	4.57E-02	---	3.00E+01	**2E-03**	---	3.92E-03	7.80E-06		**3E-08**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	1.26E-02	---	1.00E+00	**1E-02**	---	1.08E-03	4.90E-05		**5E-08**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	1.32E-02	---	NA	---	---	1.13E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	6.00E-01	N	7.21E-02	---	5.00E+00	**1E-02**	---	6.18E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	5.05E-02	---	1.00E+02	**5E-04**	---	4.33E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	7.60E-02	Y	9.14E-03	---	9.77E+01	**9E-05**	---	7.83E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.60E-01	Y	3.13E-02	---	1.00E+03	**3E-05**	---	2.68E-03	2.50E-06		**7E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.10E-01	N	4.93E-02	---	NA	---	---	4.23E-03	2.20E-05		**9E-08**
ISOPROPYL ALCOHOL	67-63-0	1.10E+01	Y	1.32E+00	---	2.00E+02	**7E-03**	---	1.13E-01	-		**---**
M,P-XYLENE	108-38-3	1.10E+00	Y	1.32E-01	---	1.00E+02	**1E-03**	---	1.13E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	4.90E-01	Y	5.89E-02	---	6.00E+02	**1E-04**	---	5.05E-03	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	4.10E-01	Y	4.93E-02	---	1.00E+02	**5E-04**	---	4.23E-03	-		**---**
TETRACHLOROETHENE	127-18-4	9.20E-02	Y	1.11E-02	---	4.00E+01	**3E-04**	---	9.48E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	8.00E-03	N	9.62E-04	---	2.00E+00	**5E-04**	---	8.25E-05	4.10E-06	M	**7E-10**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	3.80E-03	N	4.57E-04	---	8.00E+01	**6E-06**	---	3.92E-05	4.40E-06	M	**9E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0329H**	**Total Inhalation**	**8E-02**	**0E+00**	**6E-07**
		Based on NDs only	**7E-02**	**0E+00**	**5E-07**
		Based on Detects only	**1E-02**	**All ND**	**1E-07**
		Site-related only	**1E-03**	**0E+00**	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0329H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.90E-01	1.68E-02	1.01E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	8.00E-03	2.75E-04	1.65E-04	NA	NA	1.0E-06	kidney	3E-10	2E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	8.00E-03	8.25E-05		NA		3.1E-06	NHL+liver	3E-10		---		**3E-10**
VINYL CHLORIDE	75-01-4	3.80E-03	1.31E-04	7.83E-05	NA	NA	4.4E-06		6E-10	3E-10	---	---	**9E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0334H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	8.24E-03	---	NA	---	---	7.06E-04	5.80E-05		**4E-08**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.66E-01	---	2.00E+00	**1E-01**	---	2.28E-02	3.00E-05		**7E-07**
1,4-DIOXANE	123-91-1	3.61E-01	N	4.33E-02	---	3.00E+01	**1E-03**	---	3.72E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	9.80E-03	---	2.00E-01	**5E-02**	---	8.40E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.80E-01	---	2.00E+00	**1E-01**	---	2.40E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	5.90E-02	---	6.00E+01	**1E-03**	---	5.06E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	9.26E-03	---	9.00E+00	**1E-03**	---	7.94E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	9.92E-02	Y	1.19E-02	---	7.00E+00	**2E-03**	---	1.02E-03	2.60E-05		**3E-08**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	8.36E-03	---	4.00E+00	**2E-03**	---	7.16E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	5.90E-02	---	6.00E+01	**1E-03**	---	5.06E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.42E-02	Y	1.01E-02	---	8.00E+02	**1E-05**	---	8.68E-04	1.10E-05		**1E-08**
BENZENE	71-43-2	5.78E-01	Y	6.95E-02	---	3.00E+01	**2E-03**	---	5.96E-03	7.80E-06		**5E-08**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	6.25E-02	---	1.00E+00	**6E-02**	---	5.36E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	8.06E-02	---	NA	---	---	6.91E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	3.88E-01	N	4.67E-02	---	5.00E+00	**9E-03**	---	4.00E-03	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.40E-01	Y	6.49E-02	---	1.00E+02	**6E-04**	---	5.57E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.67E+00	Y	2.01E-01	---	9.77E+01	**2E-03**	---	1.72E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.71E-01	Y	3.26E-02	---	1.00E+03	**3E-05**	---	2.79E-03	2.50E-06		**7E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	4.05E-01	---	NA	---	---	3.47E-02	2.20E-05		**8E-07**
ISOPROPYL ALCOHOL	67-63-0	7.94E+00	Y	9.55E-01	---	2.00E+02	**5E-03**	---	8.18E-02	-		**---**
M,P-XYLENE	108-38-3	8.45E-01	Y	1.02E-01	---	1.00E+02	**1E-03**	---	8.71E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	6.49E-01	Y	7.80E-02	---	6.00E+02	**1E-04**	---	6.69E-03	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	1.98E-01	---	3.00E+00	**7E-02**	---	1.70E-02	3.40E-05		**6E-07**
O-XYLENE	95-47-6	4.34E-01	N	5.21E-02	---	1.00E+02	**5E-04**	---	4.47E-03	-		**---**
TETRACHLOROETHENE	127-18-4	9.64E-02	Y	1.16E-02	---	4.00E+01	**3E-04**	---	9.94E-04	2.60E-07		**3E-10**
TRICHLOROETHENE	79-01-6	5.35E-02	N	6.43E-03	---	2.00E+00	**3E-03**	---	5.51E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	3.52E-02	N	4.23E-03	---	2.00E+02	**2E-05**	---	3.63E-04	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	3.07E-03	---	8.00E+01	**4E-05**	---	2.63E-04	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0334H**	**Total Inhalation**	**5E-01**	**0E+00**	**4E-06**
		Based on NDs only	**5E-01**	**0E+00**	**3E-06**
		Based on Detects only	**1E-02**	**All ND**	**5E-07**
		Site-related only	**5E-03**	**0E+00**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0334H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.49E-01	2.23E-02	1.34E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	5.35E-02	1.84E-03	1.10E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	5.35E-02	5.51E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	2.56E-02	8.78E-04	5.27E-04	NA	NA	4.4E-06		4E-09	2E-09	---	---	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0336H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-02	N	2.89E-03	---	NA	---	---	2.47E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	4.90E-02	N	5.89E-03	---	2.00E+00	**3E-03**	---	5.05E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	8.00E-02	N	9.62E-03	---	3.00E+01	**3E-04**	---	8.25E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.15E-02	N	1.38E-03	---	2.00E-01	**7E-03**	---	1.19E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.90E-01	N	5.89E-02	---	2.00E+00	**3E-02**	---	5.05E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.20E-01	Y	2.65E-02	---	6.00E+01	**4E-04**	---	2.27E-03	-		---
1,2-DIBROMOETHANE	106-93-4	4.25E-02	N	5.11E-03	---	9.00E+00	**6E-04**	---	4.38E-04	6.00E-04		**3E-07**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	9.26E-03	---	7.00E+00	**1E-03**	---	7.94E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	1.14E-02	---	4.00E+00	**3E-03**	---	9.79E-04	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	8.00E-02	N	9.62E-03	---	6.00E+01	**2E-04**	---	8.25E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	4.50E-02	N	5.41E-03	---	8.00E+02	**7E-06**	---	4.64E-04	1.10E-05		**5E-09**
BENZENE	71-43-2	5.50E-01	Y	6.61E-02	---	3.00E+01	**2E-03**	---	5.67E-03	7.80E-06		**4E-08**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	1.26E-02	---	1.00E+00	**1E-02**	---	1.08E-03	4.90E-05		**5E-08**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	1.32E-02	---	NA	---	---	1.13E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	5.50E-01	N	6.61E-02	---	5.00E+00	**1E-02**	---	5.67E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	5.05E-02	---	1.00E+02	**5E-04**	---	4.33E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	3.10E-01	Y	3.73E-02	---	9.77E+01	**4E-04**	---	3.20E-03	2.30E-05		**7E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.10E-01	Y	2.53E-02	---	1.00E+03	**3E-05**	---	2.16E-03	2.50E-06		**5E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.05E-01	N	4.87E-02	---	NA	---	---	4.17E-03	2.20E-05		**9E-08**
ISOPROPYL ALCOHOL	67-63-0	1.90E+01	Y	2.28E+00	---	2.00E+02	**1E-02**	---	1.96E-01	-		---
M,P-XYLENE	108-38-3	6.90E-01	Y	8.30E-02	---	1.00E+02	**8E-04**	---	7.11E-03	-		---
METHYLENE CHLORIDE	75-09-2	5.00E-01	Y	6.01E-02	---	6.00E+02	**1E-04**	---	5.15E-03	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.30E-01	Y	2.77E-02	---	1.00E+02	**3E-04**	---	2.37E-03	-		---
TETRACHLOROETHENE	127-18-4	1.60E+01	Y	1.92E+00	---	4.00E+01	**5E-02**	---	1.65E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	1.80E-02	Y	2.16E-03	---	2.00E+00	**1E-03**	---	1.86E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	3.80E-03	N	4.57E-04	---	8.00E+01	**6E-06**	---	3.92E-05	4.40E-06	M	**9E-10**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0336H**	**Total Inhalation**	**1E-01**	**0E+00**	**7E-07**
		Based on NDs only	**7E-02**	**0E+00**	**5E-07**
		Based on Detects only	**7E-02**	**All ND**	**2E-07**
		Site-related only	**5E-02**	**0E+00**	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0336H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.00E-01	1.72E-02	1.03E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	1.80E-02	6.18E-04	3.71E-04	NA	NA	1.0E-06	kidney	6E-10	4E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	1.80E-02	1.86E-04		NA		3.1E-06	NHL+liver	6E-10		---		**6E-10**
VINYL CHLORIDE	75-01-4	3.80E-03	1.31E-04	7.83E-05	NA	NA	4.4E-06		6E-10	3E-10	---	---	**9E-10**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0347H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.55E-02	N	3.07E-03	---	NA	---	---	2.63E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	5.00E-02	N	6.01E-03	---	2.00E+00	**3E-03**	---	5.15E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	8.50E-02	N	1.02E-02	---	3.00E+01	**3E-04**	---	8.76E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.25E-02	N	1.50E-03	---	2.00E-01	**8E-03**	---	1.29E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	6.01E-02	---	2.00E+00	**3E-02**	---	5.15E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.30E-01	Y	5.17E-02	---	6.00E+01	**9E-04**	---	4.43E-03	-		---
1,2-DIBROMOETHANE	106-93-4	4.55E-02	N	5.47E-03	---	9.00E+00	**6E-04**	---	4.69E-04	6.00E-04		**3E-07**
1,2-DICHLOROETHANE	107-06-2	1.20E+00	Y	1.44E-01	---	7.00E+00	**2E-02**	---	1.24E-02	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	1.20E-02	---	4.00E+00	**3E-03**	---	1.03E-03	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	8.50E-02	N	1.02E-02	---	6.00E+01	**2E-04**	---	8.76E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	4.80E-02	N	5.77E-03	---	8.00E+02	**7E-06**	---	4.95E-04	1.10E-05		**5E-09**
BENZENE	71-43-2	4.90E-01	Y	5.89E-02	---	3.00E+01	**2E-03**	---	5.05E-03	7.80E-06		**4E-08**
BENZYL CHLORIDE	100-44-7	1.15E-01	N	1.38E-02	---	1.00E+00	**1E-02**	---	1.19E-03	4.90E-05		**6E-08**
BROMODICHLOROMETHANE	75-27-4	1.15E-01	N	1.38E-02	---	NA	---	---	1.19E-03	3.70E-05		**4E-08**
BROMOMETHANE	74-83-9	6.00E-01	N	7.21E-02	---	5.00E+00	**1E-02**	---	6.18E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	5.05E-02	---	1.00E+02	**5E-04**	---	4.33E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.00E+00	Y	1.20E-01	---	9.77E+01	**1E-03**	---	1.03E-02	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	6.30E-01	Y	7.58E-02	---	1.00E+03	**8E-05**	---	6.49E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.35E-01	N	5.23E-02	---	NA	---	---	4.48E-03	2.20E-05		**1E-07**
ISOPROPYL ALCOHOL	67-63-0	1.50E+01	Y	1.80E+00	---	2.00E+02	**9E-03**	---	1.55E-01	-		---
M,P-XYLENE	108-38-3	2.00E+00	Y	2.40E-01	---	1.00E+02	**2E-03**	---	2.06E-02	-		---
METHYLENE CHLORIDE	75-09-2	5.00E-01	Y	6.01E-02	---	6.00E+02	**1E-04**	---	5.15E-03	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	6.40E-01	Y	7.70E-02	---	1.00E+02	**8E-04**	---	6.60E-03	-		---
TETRACHLOROETHENE	127-18-4	9.00E-02	Y	1.08E-02	---	4.00E+01	**3E-04**	---	9.28E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.70E-02	Y	3.25E-03	---	2.00E+00	**2E-03**	---	2.78E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	4.05E-03	N	4.87E-04	---	8.00E+01	**6E-06**	---	4.17E-05	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0347H**	**Total Inhalation**	**1E-01**	**0E+00**	**1E-06**
		Based on NDs only	**7E-02**	**0E+00**	**5E-07**
		Based on Detects only	**4E-02**	**All ND**	**6E-07**
		Site-related only	**2E-03**	**0E+00**	**8E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0347H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.00E-01	1.72E-02	1.03E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	2.70E-02	9.28E-04	5.57E-04	NA	NA	1.0E-06	kidney	9E-10	6E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	2.70E-02	2.78E-04		NA		3.1E-06	NHL+liver	9E-10		---		**9E-10**
VINYL CHLORIDE	75-01-4	4.05E-03	1.39E-04	8.35E-05	NA	NA	4.4E-06		6E-10	4E-10	---	---	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0366C**

Pathway:
Inhalation of Indoor Air

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	8.24E-03	---	NA	**---**	**---**	7.06E-04	5.80E-05	**4E-08**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.66E-01	---	2.00E+00	**1E-01**	**---**	2.28E-02	3.00E-05	**7E-07**
1,4-DIOXANE	123-91-1	3.61E-01	N	4.33E-02	---	3.00E+01	**1E-03**	**---**	3.72E-03	5.00E-06	**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	9.80E-03	---	2.00E-01	**5E-02**	**---**	8.40E-04	1.60E-05	**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.80E-01	---	2.00E+00	**1E-01**	**---**	2.40E-02	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.11E-01	Y	4.94E-02	---	6.00E+01	**8E-04**	**---**	4.24E-03	-	**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	9.26E-03	---	9.00E+00	**1E-03**	**---**	7.94E-04	6.00E-04	**5E-07**
1,2-DICHLOROETHANE	107-06-2	1.84E-01	Y	2.21E-02	---	7.00E+00	**3E-03**	**---**	1.90E-03	2.60E-05	**5E-08**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	8.36E-03	---	4.00E+00	**2E-03**	**---**	7.16E-04	3.70E-06	**3E-09**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	5.90E-02	---	6.00E+01	**1E-03**	**---**	5.06E-03	-	**---**
1,4-DICHLOROBENZENE	106-46-7	1.80E-01	Y	2.16E-02	---	8.00E+02	**3E-05**	**---**	1.86E-03	1.10E-05	**2E-08**
BENZENE	71-43-2	7.83E-01	Y	9.42E-02	---	3.00E+01	**3E-03**	**---**	8.07E-03	7.80E-06	**6E-08**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	6.25E-02	---	1.00E+00	**6E-02**	**---**	5.36E-03	4.90E-05	**3E-07**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	8.06E-02	---	NA	**---**	**---**	6.91E-03	3.70E-05	**3E-07**
BROMOMETHANE	74-83-9	3.88E-01	N	4.67E-02	---	5.00E+00	**9E-03**	**---**	4.00E-03	-	**---**
CARBON TETRACHLORIDE	56-23-5	5.67E-01	Y	6.82E-02	---	1.00E+02	**7E-04**	**---**	5.84E-03	6.00E-06	**4E-08**
CHLOROFORM	67-66-3	6.04E-01	Y	7.26E-02	---	9.77E+01	**7E-04**	**---**	6.23E-03	2.30E-05	**1E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	4.90E+00	Y	5.89E-01	---	1.00E+03	**6E-04**	**---**	5.05E-02	2.50E-06	**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	4.05E-01	---	NA	**---**	**---**	3.47E-02	2.20E-05	**8E-07**
ISOPROPYL ALCOHOL	67-63-0	1.27E+01	Y	1.53E+00	---	2.00E+02	**8E-03**	**---**	1.31E-01	-	**---**
M,P-XYLENE	108-38-3	1.22E+01	Y	1.47E+00	---	1.00E+02	**1E-02**	**---**	1.26E-01	-	**---**
METHYLENE CHLORIDE	75-09-2	7.74E+00	Y	9.31E-01	---	6.00E+02	**2E-03**	**---**	7.98E-02	1.00E-08	M **4E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.98E-01	---	3.00E+00	**7E-02**	**---**	1.70E-02	3.40E-05	**6E-07**
O-XYLENE	95-47-6	2.42E+00	Y	2.91E-01	---	1.00E+02	**3E-03**	**---**	2.49E-02	-	**---**
TETRACHLOROETHENE	127-18-4	1.07E+00	Y	1.29E-01	---	4.00E+01	**3E-03**	**---**	1.10E-02	2.60E-07	**3E-09**
TRICHLOROETHENE	79-01-6	6.59E-02	Y	7.92E-03	---	2.00E+00	**4E-03**	**---**	6.79E-04	4.10E-06	M **6E-09**
VINYL ACETATE	108-05-4	3.52E-02	N	4.23E-03	---	2.00E+02	**2E-05**	**---**	3.63E-04	-	**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	3.07E-03	---	8.00E+01	**4E-05**	**---**	2.63E-04	4.40E-06	M **6E-09**

			HI$_{child}$	**HI$_{adult}$**	**Risk$_{lifetime}$**
Daycare children	**0366C**	**Total Inhalation**	**5E-01**	**0E+00**	**4E-06**
		Based on NDs only	**5E-01**	**0E+00**	**3E-06**
		Based on Detects only	**4E-02**	**All ND**	**5E-07**
		Site-related only	**9E-03**	**0E+00**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0366C**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.74E+00	2.66E-01	1.60E-01	NA	NA	1.0E-08		3E-09	2E-09	---	---	**4E-09**
TRICHLOROETHENE	79-01-6	6.59E-02	2.26E-03	1.36E-03	NA	NA	1.0E-06	kidney	2E-09	1E-09	---	---	**4E-09**
TRICHLOROETHENE	79-01-6	6.59E-02	6.79E-04		NA		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	2.56E-02	8.78E-04	5.27E-04	NA	NA	4.4E-06		4E-09	2E-09	---	---	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0381H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.15E-02	N	1.38E-03	---	NA	---	---	1.19E-04	5.80E-05		**7E-09**
1,3-BUTADIENE	106-99-0	5.50E-02	N	6.61E-03	---	2.00E+00	**3E-03**	---	5.67E-04	3.00E-05		**2E-08**
1,4-DIOXANE	123-91-1	4.30E-01	Y	5.17E-02	---	3.00E+01	**2E-03**	---	4.43E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	9.02E-04	---	2.00E-01	**5E-03**	---	7.73E-05	1.60E-05		**1E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.50E-01	N	6.61E-02	---	2.00E+00	**3E-02**	---	5.67E-03	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.10E-01	Y	2.53E-02	---	6.00E+01	**4E-04**	---	2.16E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.65E-02	N	4.39E-03	---	9.00E+00	**5E-04**	---	3.76E-04	6.00E-04		**2E-07**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	1.32E-02	---	7.00E+00	**2E-03**	---	1.13E-03	2.60E-05		**3E-08**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	1.20E-02	---	4.00E+00	**3E-03**	---	1.03E-03	3.70E-06		**4E-09**
1,3,5-Trimethylbenzene	108-67-8	6.50E-02	N	7.82E-03	---	6.00E+01	**1E-04**	---	6.70E-04	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	6.61E-03	---	8.00E+02	**8E-06**	---	5.67E-04	1.10E-05		**6E-09**
BENZENE	71-43-2	7.60E-01	Y	9.14E-02	---	3.00E+01	**3E-03**	---	7.83E-03	7.80E-06		**6E-08**
BENZYL CHLORIDE	100-44-7	9.50E-02	N	1.14E-02	---	1.00E+00	**1E-02**	---	9.79E-04	4.90E-05		**5E-08**
BROMODICHLOROMETHANE	75-27-4	1.40E-01	N	1.68E-02	---	NA	---	---	1.44E-03	3.70E-05		**5E-08**
BROMOMETHANE	74-83-9	7.00E-01	N	8.42E-02	---	5.00E+00	**2E-02**	---	7.21E-03	-		---
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	4.93E-02	---	1.00E+02	**5E-04**	---	4.23E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	9.60E-01	Y	1.15E-01	---	9.77E+01	**1E-03**	---	9.89E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.40E+00	Y	2.89E-01	---	1.00E+03	**3E-04**	---	2.47E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	8.42E-02	---	NA	---	---	7.21E-03	2.20E-05		**2E-07**
ISOPROPYL ALCOHOL	67-63-0	2.40E+01	Y	2.89E+00	---	2.00E+02	**1E-02**	---	2.47E-01	-		---
M,P-XYLENE	108-38-3	1.00E+01	Y	1.20E+00	---	1.00E+02	**1E-02**	---	1.03E-01	-		---
METHYLENE CHLORIDE	75-09-2	2.80E-01	N	3.37E-02	---	6.00E+02	**6E-05**	---	2.89E-03	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.70E+00	Y	3.25E-01	---	1.00E+02	**3E-03**	---	2.78E-02	-		---
TETRACHLOROETHENE	127-18-4	6.20E-02	Y	7.46E-03	---	4.00E+01	**2E-04**	---	6.39E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	1.80E-02	N	2.16E-03	---	2.00E+00	**1E-03**	---	1.86E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	9.00E-03	N	1.08E-03	---	8.00E+01	**1E-05**	---	9.28E-05	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0381H**	**Total Inhalation**	**1E-01**	**0E+00**	**1E-06**
		Based on NDs only	**7E-02**	**0E+00**	**5E-07**
		Based on Detects only	**4E-02**	**All ND**	**4E-07**
		Site-related only	**3E-03**	**0E+00**	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0381H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.80E-01	9.62E-03	5.77E-03	NA	NA	1.0E-08		1E-10	6E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	1.80E-02	6.18E-04	3.71E-04	NA	NA	1.0E-06	kidney	6E-10	4E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	1.80E-02	1.86E-04		NA		3.1E-06	NHL+liver	6E-10		---		**6E-10**
VINYL CHLORIDE	75-01-4	9.00E-03	3.09E-04	1.86E-04	NA	NA	4.4E-06		1E-09	8E-10	---	---	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0392H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A		TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.30E-02	N	2.77E-03	---	NA	---	---	2.37E-04	5.80E-05		**1E-08**
1,3-BUTADIENE	106-99-0	1.10E-01	N	1.32E-02	---	2.00E+00	**7E-03**	---	1.13E-03	3.00E-05		**3E-08**
1,4-DIOXANE	123-91-1	1.55E-01	N	1.86E-02	---	3.00E+01	**6E-04**	---	1.60E-03	5.00E-06		**8E-09**
1,1,2-TRICHLOROETHANE	79-00-5	1.50E-02	N	1.80E-03	---	2.00E-01	**9E-03**	---	1.55E-04	1.60E-05		**2E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	1.05E+00	N	1.26E-01	---	2.00E+00	**6E-02**	---	1.08E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.60E-01	Y	5.53E-02	---	6.00E+01	**9E-04**	---	4.74E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	8.42E-03	---	9.00E+00	**9E-04**	---	7.21E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	8.40E-02	Y	1.01E-02	---	7.00E+00	**1E-03**	---	8.66E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	2.00E-01	N	2.40E-02	---	4.00E+00	**6E-03**	---	2.06E-03	3.70E-06		**8E-09**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	1.56E-02	---	6.00E+01	**3E-04**	---	1.34E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	1.10E-01	N	1.32E-02	---	8.00E+02	**2E-05**	---	1.13E-03	1.10E-05		**1E-08**
BENZENE	71-43-2	6.30E-01	Y	7.58E-02	---	3.00E+01	**3E-03**	---	6.49E-03	7.80E-06		**5E-08**
BENZYL CHLORIDE	100-44-7	1.85E-01	N	2.22E-02	---	1.00E+00	**2E-02**	---	1.91E-03	4.90E-05		**9E-08**
BROMODICHLOROMETHANE	75-27-4	2.75E-01	N	3.31E-02	---	NA	---	---	2.83E-03	3.70E-05		**1E-07**
BROMOMETHANE	74-83-9	1.45E+00	N	1.74E-01	---	5.00E+00	**3E-02**	---	1.49E-02	-		---
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	4.57E-02	---	1.00E+02	**5E-04**	---	3.92E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	2.70E-01	Y	3.25E-02	---	9.77E+01	**3E-04**	---	2.78E-03	2.30E-05		**6E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	3.00E-01	Y	3.61E-02	---	1.00E+03	**4E-05**	---	3.09E-03	2.50E-06		**8E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.40E+00	N	1.68E-01	---	NA	---	---	1.44E-02	2.20E-05		**3E-07**
ISOPROPYL ALCOHOL	67-63-0	2.60E+01	Y	3.13E+00	---	2.00E+02	**2E-02**	---	2.68E-01	-		---
M,P-XYLENE	108-38-3	1.20E+00	Y	1.44E-01	---	1.00E+02	**1E-03**	---	1.24E-02	-		---
METHYLENE CHLORIDE	75-09-2	3.10E-01	N	3.73E-02	---	6.00E+02	**6E-05**	---	3.20E-03	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	5.20E-01	Y	6.25E-02	---	1.00E+02	**6E-04**	---	5.36E-03	-		---
TETRACHLOROETHENE	127-18-4	7.40E-02	Y	8.90E-03	---	4.00E+01	**2E-04**	---	7.63E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	3.60E-02	N	4.33E-03	---	2.00E+00	**2E-03**	---	3.71E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	1.75E-02	N	2.10E-03	---	8.00E+01	**3E-05**	---	1.80E-04	4.40E-06	M	**4E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0392H**	**Total Inhalation**	**2E-01**	**0E+00**	**1E-06**
		Based on NDs only	**1E-01**	**0E+00**	**1E-06**
		Based on Detects only	**2E-02**	**All ND**	**2E-07**
		Site-related only	**3E-03**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0392H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.10E-01	1.07E-02	6.39E-03	NA	NA	1.0E-08		1E-10	6E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	3.60E-02	1.24E-03	7.42E-04	NA	NA	1.0E-06	kidney	1E-09	7E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	3.60E-02	3.71E-04		NA		3.1E-06	NHL+liver	1E-09		---		**1E-09**
VINYL CHLORIDE	75-01-4	1.75E-02	6.01E-04	3.61E-04	NA	NA	4.4E-06		3E-09	2E-09	---	---	**4E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0395H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	8.24E-03	---	NA	---	---	7.06E-04	5.80E-05		**4E-08**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.66E-01	---	2.00E+00	**1E-01**	---	2.28E-02	3.00E-05		**7E-07**
1,4-DIOXANE	123-91-1	3.61E-01	N	4.33E-02	---	3.00E+01	**1E-03**	---	3.72E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	9.80E-03	---	2.00E-01	**5E-02**	---	8.40E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.80E-01	---	2.00E+00	**1E-01**	---	2.40E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	5.90E-02	---	6.00E+01	**1E-03**	---	5.06E-03	-		---
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	9.26E-03	---	9.00E+00	**1E-03**	---	7.94E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	1.60E-01	Y	1.92E-02	---	7.00E+00	**3E-03**	---	1.65E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	8.36E-03	---	4.00E+00	**2E-03**	---	7.16E-04	3.70E-06		**3E-09**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	5.90E-02	---	6.00E+01	**1E-03**	---	5.06E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	6.13E-02	Y	7.37E-03	---	8.00E+02	**9E-06**	---	6.32E-04	1.10E-05		**7E-09**
BENZENE	71-43-2	5.27E-01	Y	6.34E-02	---	3.00E+01	**2E-03**	---	5.43E-03	7.80E-06		**4E-08**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	6.25E-02	---	1.00E+00	**6E-02**	---	5.36E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	8.06E-02	---	NA	---	---	6.91E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	3.88E-01	N	4.67E-02	---	5.00E+00	**9E-03**	---	4.00E-03	-		---
CARBON TETRACHLORIDE	56-23-5	6.08E-01	Y	7.31E-02	---	1.00E+02	**7E-04**	---	6.27E-03	6.00E-06		**4E-08**
CHLOROFORM	67-66-3	5.31E-01	Y	6.38E-02	---	9.77E+01	**7E-04**	---	5.47E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.43E-01	Y	2.92E-02	---	1.00E+03	**3E-05**	---	2.50E-03	2.50E-06		**6E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	4.05E-01	---	NA	---	---	3.47E-02	2.20E-05		**8E-07**
ISOPROPYL ALCOHOL	67-63-0	3.52E+01	Y	4.23E+00	---	2.00E+02	**2E-02**	---	3.63E-01	-		---
M,P-XYLENE	108-38-3	8.65E-01	N	1.04E-01	---	1.00E+02	**1E-03**	---	8.92E-03	-		---
METHYLENE CHLORIDE	75-09-2	6.91E-01	Y	8.31E-02	---	6.00E+02	**1E-04**	---	7.12E-03	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	1.98E-01	---	3.00E+00	**7E-02**	---	1.70E-02	3.40E-05		**6E-07**
O-XYLENE	95-47-6	4.34E-01	N	5.21E-02	---	1.00E+02	**5E-04**	---	4.47E-03	-		---
TETRACHLOROETHENE	127-18-4	2.70E-01	Y	3.25E-02	---	4.00E+01	**8E-04**	---	2.78E-03	2.60E-07		**7E-10**
TRICHLOROETHENE	79-01-6	2.17E-01	Y	2.61E-02	---	2.00E+00	**1E-02**	---	2.24E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	4.23E-03	---	2.00E+02	**2E-05**	---	3.63E-04	-		---
VINYL CHLORIDE	75-01-4	2.56E-02	N	3.07E-03	---	8.00E+01	**4E-05**	---	2.63E-04	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0395H**	**Total Inhalation**	**5E-01**	**0E+00**	**3E-06**
		Based on NDs only	**5E-01**	**0E+00**	**3E-06**
		Based on Detects only	**4E-02**	**All ND**	**3E-07**
		Site-related only	**2E-02**	**0E+00**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0395H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.91E-01	2.37E-02	1.42E-02	NA	NA	1.0E-08		2E-10	1E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	2.17E-01	7.46E-03	4.47E-03	NA	NA	1.0E-06	kidney	7E-09	4E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.17E-01	2.24E-03		NA		3.1E-06	NHL+liver	7E-09		---		**7E-09**
VINYL CHLORIDE	75-01-4	2.56E-02	8.78E-04	5.27E-04	NA	NA	4.4E-06		4E-09	2E-09	---	---	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**B13-I**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	1.20E-01	#N/A	TWFc (unitless)	1.03E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.40E-01	N	4.09E-02	---	4.00E+01	**1E-03**	---	3.50E-03	2.60E-07		**9E-10**
TRICHLOROETHENE	79-01-6	2.70E-01	N	3.25E-02	---	2.00E+00	**2E-02**	---	2.78E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**B13-I**	**Total Inhalation**	**2E-02**	**0E+00**	**2E-08**
		Based on NDs only	**2E-02**	**0E+00**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**2E-02**	**0E+00**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**B13-I**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	1.03E-02	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	NA	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.70E-01	9.28E-03	5.57E-03	NA	NA	1.0E-06	kidney	9E-09	6E-09	---	---	**1E-08**
TRICHLOROETHENE	79-01-6	2.70E-01	2.78E-03		NA		3.1E-06	NHL+liver	9E-09		---		**9E-09**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	NA	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0001H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	9.00E-02	N	8.63E-02	8.63E-02	3.00E+01	**3E-03**	**3E-03**	3.21E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	1.30E+00	Y	1.25E+00	1.25E+00	7.00E+00	**2E-01**	**2E-01**	4.63E-01	2.60E-05		**1E-05**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	8.64E-01	8.64E-01	8.00E+02	**1E-03**	**1E-03**	3.21E-01	1.10E-05		**4E-06**
BENZENE	71-43-2	6.50E-01	Y	6.23E-01	6.23E-01	3.00E+01	**2E-02**	**2E-02**	2.32E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		---
CARBON TETRACHLORIDE	56-23-5	1.10E+00	Y	1.05E+00	1.05E+00	1.00E+02	**1E-02**	**1E-02**	3.92E-01	6.00E-06		**2E-06**
CHLOROFORM	67-66-3	1.30E+00	Y	1.25E+00	1.25E+00	9.77E+01	**1E-02**	**1E-02**	4.63E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	2.10E+01	Y	2.01E+01	2.01E+01	7.00E+01	**3E-01**	**3E-01**	7.48E+00	-		---
ETHYLBENZENE	100-41-4	2.52E+00	Y	2.41E+00	2.41E+00	1.00E+03	**2E-03**	**2E-03**	8.96E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	9.55E+00	Y	9.16E+00	9.16E+00	1.00E+02	**9E-02**	**9E-02**	3.40E+00	-		---
METHYLENE CHLORIDE	75-09-2	1.94E+00	Y	1.86E+00	1.86E+00	6.00E+02	**3E-03**	**3E-03**	M	1.00E-08	M	**2E-08**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.43E+00	Y	2.33E+00	2.33E+00	1.00E+02	**2E-02**	**2E-02**	8.66E-01	-		---
TETRACHLOROETHENE	127-18-4	5.15E+00	Y	4.94E+00	4.94E+00	4.00E+01	**1E-01**	**1E-01**	1.83E+00	2.60E-07		**5E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	3.37E-01	3.37E-01	2.00E+02	**2E-03**	**2E-03**	1.25E-01	-		---
VINYL CHLORIDE	75-01-4	1.74E-01	Y	1.67E-01	1.67E-01	8.00E+01	**2E-03**	**2E-03**	M	4.40E-06	M	**8E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0001H**	**Total Inhalation**	**5E+00**	**5E+00**	**2E-04**
		Based on NDs only	**4E+00**	**4E+00**	**2E-04**
		Based on Detects only	**8E-01**	**8E-01**	**3E-05**
		Site-related only	**2E-01**	**2E-01**	**2E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0001H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.94E+00	5.33E-01	3.20E-01	7.99E-01	2.66E-01	1.0E-08		5E-09	3E-09	8E-09	3E-09	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	1.74E-01	4.76E-02	2.86E-02	7.14E-02	2.38E-02	4.4E-06		2E-07	1E-07	3E-07	1E-07	**8E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0002H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	9.00E-02	N	8.63E-02	8.63E-02	3.00E+01	**3E-03**	**3E-03**	3.21E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	2.92E-01	2.92E-01	7.00E+00	**4E-02**	**4E-02**	1.09E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	8.64E-01	8.64E-01	8.00E+02	**1E-03**	**1E-03**	3.21E-01	1.10E-05		**4E-06**
BENZENE	71-43-2	5.50E-01	Y	5.27E-01	5.27E-01	3.00E+01	**2E-02**	**2E-02**	1.96E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.32E+00	Y	1.26E+00	1.26E+00	9.77E+01	**1E-02**	**1E-02**	4.69E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	1.84E+01	Y	1.76E+01	1.76E+01	7.00E+01	**3E-01**	**3E-01**	6.54E+00	-		---
ETHYLBENZENE	100-41-4	7.38E-01	Y	7.07E-01	7.07E-01	1.00E+03	**7E-04**	**7E-04**	2.63E-01	2.50E-06		**7E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	5.40E+00	Y	5.18E+00	5.18E+00	1.00E+02	**5E-02**	**5E-02**	1.92E+00	-		---
METHYLENE CHLORIDE	75-09-2	8.68E+00	Y	8.32E+00	8.32E+00	6.00E+02	**1E-02**	**1E-02**	M	1.00E-08	M	**9E-08**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	9.70E-01	Y	9.30E-01	9.30E-01	1.00E+02	**9E-03**	**9E-03**	3.45E-01	-		---
TETRACHLOROETHENE	127-18-4	1.42E+00	Y	1.36E+00	1.36E+00	4.00E+01	**3E-02**	**3E-02**	5.07E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	2.78E-01	2.78E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**6E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	3.37E-01	3.37E-01	2.00E+02	**2E-03**	**2E-03**	1.25E-01	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0002H**	**Total Inhalation**	**5E+00**	**5E+00**	**2E-04**
		Based on NDs only	**4E+00**	**4E+00**	**2E-04**
		Based on Detects only	**5E-01**	**5E-01**	**1E-05**
		Site-related only	**2E-01**	**2E-01**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0002H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.68E+00	2.38E+00	1.43E+00	3.57E+00	1.19E+00	1.0E-08		2E-08	1E-08	4E-08	1E-08	**9E-08**
TRICHLOROETHENE	79-01-6	2.90E-01	7.95E-02	4.77E-02	1.19E-01	3.97E-02	1.0E-06	kidney	8E-08	5E-08	1E-07	4E-08	**3E-07**
TRICHLOROETHENE	79-01-6	2.90E-01	2.38E-02		7.95E-02		3.1E-06	NHL+liver	7E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0003H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	3.30E+00	Y	3.16E+00	3.16E+00	NA	---	---	1.18E+00	5.80E-05		**7E-05**
1,3-BUTADIENE	106-99-0	2.90E-01	Y	2.78E-01	2.78E-01	2.00E+00	**1E-01**	**1E-01**	1.03E-01	3.00E-05		**3E-06**
1,4-DIOXANE	123-91-1	2.95E-01	N	2.83E-01	2.83E-01	3.00E+01	**9E-03**	**9E-03**	1.05E-01	5.00E-06		**5E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	1.07E+00	1.07E+00	2.00E+00	**5E-01**	**5E-01**	3.96E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.60E+01	Y	2.50E+01	2.50E+01	6.00E+01	**4E-01**	**4E-01**	9.27E+00	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	2.00E-01	Y	1.92E-01	1.92E-01	7.00E+00	**3E-02**	**3E-02**	7.12E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.90E+00	Y	7.58E+00	7.58E+00	6.00E+01	**1E-01**	**1E-01**	2.81E+00	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	4.32E-01	4.32E-01	8.00E+02	**5E-04**	**5E-04**	1.61E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	2.20E+01	Y	2.11E+01	2.11E+01	3.00E+01	**7E-01**	**7E-01**	7.85E+00	7.80E-06		**6E-05**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	7.67E-01	7.67E-01	1.00E+00	**8E-01**	**8E-01**	2.85E-01	4.90E-05		**1E-05**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	5.00E-01	N	4.79E-01	4.79E-01	5.00E+00	**1E-01**	**1E-01**	1.78E-01	-		---
CARBON TETRACHLORIDE	56-23-5	6.30E-01	Y	6.04E-01	6.04E-01	1.00E+02	**6E-03**	**6E-03**	2.24E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	4.73E+01	Y	4.54E+01	4.54E+01	9.77E+01	**5E-01**	**5E-01**	1.69E+01	2.30E-05		**4E-04**
ETHYL ACETATE	141-78-6	1.44E+01	Y	1.38E+01	1.38E+01	7.00E+01	**2E-01**	**2E-01**	5.13E+00	-		---
ETHYLBENZENE	100-41-4	1.30E+01	Y	1.25E+01	1.25E+01	1.00E+03	**1E-02**	**1E-02**	4.64E+00	2.50E-06		**1E-05**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL	67-63-0	2.60E+01	Y	2.49E+01	2.49E+01	2.00E+02	**1E-01**	**1E-01**	9.26E+00	-		---
M,P-XYLENE	108-38-3	6.95E+01	Y	6.66E+01	6.66E+01	1.00E+02	**7E-01**	**7E-01**	2.47E+01	-		---
METHYLENE CHLORIDE	75-09-2	9.50E-01	Y	9.11E-01	9.11E-01	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**9E-09**
NAPHTHALENE	91-20-3	7.00E-02	Y	6.71E-02	6.71E-02	3.00E+00	**2E-02**	**2E-02**	2.49E-02	3.40E-05		**8E-07**
O-XYLENE	95-47-6	2.20E+01	Y	2.11E+01	2.11E+01	1.00E+02	**2E-01**	**2E-01**	7.84E+00	-		---
TETRACHLOROETHENE	127-18-4	1.70E+01	Y	1.63E+01	1.63E+01	4.00E+01	**4E-01**	**4E-01**	6.05E+00	2.60E-07		**2E-06**
TRICHLOROETHENE	79-01-6	4.10E-02	Y	3.93E-02	3.93E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**9E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	1.84E-01	1.84E-01	8.00E+01	**2E-03**	**2E-03**	M	4.40E-06	M	**8E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0003H**	**Total Inhalation**	**7E+00**	**7E+00**	**7E-04**
		Based on NDs only	**4E+00**	**4E+00**	**2E-04**
		Based on Detects only	**4E+00**	**4E+00**	**5E-04**
		Site-related only	**4E-01**	**4E-01**	**3E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0003H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.50E-01	2.60E-01	1.56E-01	3.90E-01	1.30E-01	1.0E-08		3E-09	2E-09	4E-09	1E-09	**9E-09**
TRICHLOROETHENE	79-01-6	4.10E-02	1.12E-02	6.74E-03	1.68E-02	5.62E-03	1.0E-06	kidney	1E-08	7E-09	2E-08	6E-09	**4E-08**
TRICHLOROETHENE	79-01-6	4.10E-02	3.37E-03		1.12E-02		3.1E-06	NHL+liver	1E-08		3E-08		**5E-08**
VINYL CHLORIDE	75-01-4	1.92E-01	5.25E-02	3.15E-02	7.87E-02	2.62E-02	4.4E-06		2E-07	1E-07	3E-07	1E-07	**8E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0004H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	9.00E-02	N	8.63E-02	8.63E-02	3.00E+01	**3E-03**	**3E-03**	3.21E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	2.92E-01	2.92E-01	7.00E+00	**4E-02**	**4E-02**	1.09E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	8.64E-01	8.64E-01	8.00E+02	**1E-03**	**1E-03**	3.21E-01	1.10E-05		**4E-06**
BENZENE	71-43-2	6.71E-01	Y	6.43E-01	6.43E-01	3.00E+01	**2E-02**	**2E-02**	2.39E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	8.50E-01	Y	8.15E-01	8.15E-01	9.77E+01	**8E-03**	**8E-03**	3.03E-01	2.30E-05		**7E-06**
ETHYL ACETATE	141-78-6	1.60E+00	Y	1.53E+00	1.53E+00	7.00E+01	**2E-02**	**2E-02**	5.70E-01	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	3.12E-01	3.12E-01	1.00E+03	**3E-04**	**3E-04**	1.16E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	9.99E-01	Y	9.58E-01	9.58E-01	1.00E+02	**1E-02**	**1E-02**	3.56E-01	-		---
METHYLENE CHLORIDE	75-09-2	2.10E+00	Y	2.01E+00	2.01E+00	6.00E+02	**3E-03**	**3E-03**	M	1.00E-08	M	**2E-08**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	3.12E-01	3.12E-01	1.00E+02	**3E-03**	**3E-03**	1.16E-01	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	3.36E-01	3.36E-01	4.00E+01	**8E-03**	**8E-03**	1.25E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	3.37E-01	3.37E-01	2.00E+02	**2E-03**	**2E-03**	1.25E-01	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0004H**	**Total Inhalation**	**4E+00**	**4E+00**	**2E-04**
		Based on NDs only	**4E+00**	**4E+00**	**2E-04**
		Based on Detects only	**6E-02**	**6E-02**	**9E-06**
		Site-related only	**1E-01**	**1E-01**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0004H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.10E+00	5.75E-01	3.45E-01	8.63E-01	2.88E-01	1.0E-08		6E-09	3E-09	9E-09	3E-09	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0008H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	1.07E+00	1.07E+00	2.00E+00	**5E-01**	**5E-01**	3.96E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.70E+01	Y	2.59E+01	2.59E+01	6.00E+01	**4E-01**	**4E-01**	9.62E+00	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	2.92E-01	2.92E-01	7.00E+00	**4E-02**	**4E-02**	1.09E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	8.84E+00	Y	8.48E+00	8.48E+00	6.00E+01	**1E-01**	**1E-01**	3.15E+00	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	4.32E-01	4.32E-01	8.00E+02	**5E-04**	**5E-04**	1.61E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	3.51E+01	Y	3.37E+01	3.37E+01	3.00E+01	**1E+00**	**1E+00**	1.25E+01	7.80E-06		**1E-04**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	7.67E-01	7.67E-01	1.00E+00	**8E-01**	**8E-01**	2.85E-01	4.90E-05		**1E-05**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	3.66E-01	N	3.51E-01	3.51E-01	9.77E+01	**4E-03**	**4E-03**	1.30E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	2.10E+00	Y	2.01E+00	2.01E+00	7.00E+01	**3E-02**	**3E-02**	7.48E-01	-		---
ETHYLBENZENE	100-41-4	2.73E+01	Y	2.62E+01	2.62E+01	1.00E+03	**3E-02**	**3E-02**	9.74E+00	2.50E-06		**2E-05**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.22E+02	Y	1.17E+02	1.17E+02	1.00E+02	**1E+00**	**1E+00**	4.33E+01	-		---
METHYLENE CHLORIDE	75-09-2	8.00E-01	Y	7.67E-01	7.67E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**8E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	4.04E+01	Y	3.87E+01	3.87E+01	1.00E+02	**4E-01**	**4E-01**	1.44E+01	-		---
TETRACHLOROETHENE	127-18-4	2.91E+00	Y	2.79E+00	2.79E+00	4.00E+01	**7E-02**	**7E-02**	1.04E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	4.05E-01	N	3.88E-01	3.88E-01	2.00E+00	**2E-01**	**2E-01**	M	4.10E-06	M	**8E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	1.84E-01	1.84E-01	8.00E+01	**2E-03**	**2E-03**	M	4.40E-06	M	**8E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0008H**	**Total Inhalation**	**7E+00**	**7E+00**	**3E-04**
		Based on NDs only	**4E+00**	**4E+00**	**2E-04**
		Based on Detects only	**3E+00**	**3E+00**	**1E-04**
		Site-related only	**3E-01**	**3E-01**	**2E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0008H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.00E-01	2.19E-01	1.32E-01	3.29E-01	1.10E-01	1.0E-08		2E-09	1E-09	3E-09	1E-09	**8E-09**
TRICHLOROETHENE	79-01-6	4.05E-01	1.11E-01	6.66E-02	1.66E-01	5.55E-02	1.0E-06	kidney	1E-07	7E-08	2E-07	6E-08	**4E-07**
TRICHLOROETHENE	79-01-6	4.05E-01	3.33E-02		1.11E-01		3.1E-06	NHL+liver	1E-07		3E-07		**4E-07**
VINYL CHLORIDE	75-01-4	1.92E-01	5.25E-02	3.15E-02	7.87E-02	2.62E-02	4.4E-06		2E-07	1E-07	3E-07	1E-07	**8E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0011H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.40E-01	Y	1.34E-01	1.34E-01	2.00E+00	**7E-02**	**7E-02**	4.99E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	1.70E-01	Y	1.63E-01	1.63E-01	3.00E+01	**5E-03**	**5E-03**	6.05E-02	5.00E-06		**3E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.45E+00	N	1.39E+00	1.39E+00	2.00E+00	**7E-01**	**7E-01**	5.16E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.60E-01	Y	3.45E-01	3.45E-01	6.00E+01	**6E-03**	**6E-03**	1.28E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	1.20E-01	Y	1.15E-01	1.15E-01	7.00E+00	**2E-02**	**2E-02**	4.27E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	3.55E-01	3.55E-01	6.00E+01	**6E-03**	**6E-03**	1.32E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	4.32E-01	4.32E-01	8.00E+02	**5E-04**	**5E-04**	1.61E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	8.60E-01	Y	8.25E-01	8.25E-01	3.00E+01	**3E-02**	**3E-02**	3.06E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	1.05E-01	1.05E-01	1.00E+00	**1E-01**	**1E-01**	3.92E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	3.70E-01	N	3.55E-01	3.55E-01	5.00E+00	**7E-02**	**7E-02**	1.32E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	4.41E-01	4.41E-01	1.00E+02	**4E-03**	**4E-03**	1.64E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	5.50E-01	Y	5.27E-01	5.27E-01	9.77E+01	**5E-03**	**5E-03**	1.96E-01	2.30E-05		**5E-06**
ETHYL ACETATE	141-78-6	1.62E+00	Y	1.55E+00	1.55E+00	7.00E+01	**2E-02**	**2E-02**	5.77E-01	-		---
ETHYLBENZENE	100-41-4	4.70E-01	Y	4.51E-01	4.51E-01	1.00E+03	**5E-04**	**5E-04**	1.67E-01	2.50E-06		**4E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.95E+00	N	1.87E+00	1.87E+00	NA	---	---	6.95E-01	2.20E-05		**2E-05**
ISOPROPYL ALCOHOL	67-63-0	5.90E+00	Y	5.66E+00	5.66E+00	2.00E+02	**3E-02**	**3E-02**	2.10E+00	-		---
M,P-XYLENE	108-38-3	1.20E+00	Y	1.15E+00	1.15E+00	1.00E+02	**1E-02**	**1E-02**	4.27E-01	-		---
METHYLENE CHLORIDE	75-09-2	3.82E+00	Y	3.66E+00	3.66E+00	6.00E+02	**6E-03**	**6E-03**	M	1.00E-08	M	**4E-08**
NAPHTHALENE	91-20-3	4.65E-02	N	4.46E-02	4.46E-02	3.00E+00	**1E-02**	**1E-02**	1.66E-02	3.40E-05		**6E-07**
O-XYLENE	95-47-6	4.50E-01	Y	4.32E-01	4.32E-01	1.00E+02	**4E-03**	**4E-03**	1.60E-01	-		---
TETRACHLOROETHENE	127-18-4	1.90E+01	Y	1.82E+01	1.82E+01	4.00E+01	**5E-01**	**5E-01**	6.77E+00	2.60E-07		**2E-06**
TRICHLOROETHENE	79-01-6	5.80E-02	Y	5.56E-02	5.56E-02	2.00E+00	**3E-02**	**3E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0011H**	**Total Inhalation**	**4E+00**	**4E+00**	**2E-04**
		Based on NDs only	**3E+00**	**3E+00**	**2E-04**
		Based on Detects only	**7E-01**	**7E-01**	**1E-05**
		Site-related only	**5E-01**	**5E-01**	**2E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0011H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.82E+00	1.05E+00	6.28E-01	1.57E+00	5.23E-01	1.0E-08		1E-08	6E-09	2E-08	5E-09	**4E-08**
TRICHLOROETHENE	79-01-6	5.80E-02	1.59E-02	9.53E-03	2.38E-02	7.95E-03	1.0E-06	kidney	2E-08	1E-08	2E-08	8E-09	**6E-08**
TRICHLOROETHENE	79-01-6	5.80E-02	4.77E-03		1.59E-02		3.1E-06	NHL+liver	1E-08		5E-08		**6E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0012H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	9.00E-02	N	8.63E-02	8.63E-02	3.00E+01	**3E-03**	**3E-03**	3.21E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	2.92E-01	2.92E-01	7.00E+00	**4E-02**	**4E-02**	1.09E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	8.64E-01	8.64E-01	8.00E+02	**1E-03**	**1E-03**	3.21E-01	1.10E-05		**4E-06**
BENZENE	71-43-2	6.39E-01	Y	6.12E-01	6.12E-01	3.00E+01	**2E-02**	**2E-02**	2.27E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.51E+00	Y	1.45E+00	1.45E+00	9.77E+01	**1E-02**	**1E-02**	5.39E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	6.48E+00	Y	6.22E+00	6.22E+00	7.00E+01	**9E-02**	**9E-02**	2.31E+00	-		---
ETHYLBENZENE	100-41-4	1.13E+00	Y	1.08E+00	1.08E+00	1.00E+03	**1E-03**	**1E-03**	4.02E-01	2.50E-06		**1E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	3.73E+00	Y	3.58E+00	3.58E+00	1.00E+02	**4E-02**	**4E-02**	1.33E+00	-		---
METHYLENE CHLORIDE	75-09-2	1.11E+00	Y	1.07E+00	1.07E+00	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**1E-08**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	9.98E-01	Y	9.57E-01	9.57E-01	1.00E+02	**1E-02**	**1E-02**	3.55E-01	-		---
TETRACHLOROETHENE	127-18-4	2.58E+00	Y	2.47E+00	2.47E+00	4.00E+01	**6E-02**	**6E-02**	9.19E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	3.37E-01	3.37E-01	2.00E+02	**2E-03**	**2E-03**	1.25E-01	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0012H**	**Total Inhalation**	**4E+00**	**4E+00**	**2E-04**
		Based on NDs only	**4E+00**	**4E+00**	**2E-04**
		Based on Detects only	**2E-01**	**2E-01**	**2E-05**
		Site-related only	**2E-01**	**2E-01**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0012H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.11E+00	3.04E-01	1.83E-01	4.57E-01	1.52E-01	1.0E-08		3E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0013H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	9.50E-02	N	9.11E-02	9.11E-02	3.00E+01	**3E-03**	**3E-03**	3.38E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	1.30E-01	Y	1.25E-01	1.25E-01	7.00E+00	**2E-02**	**2E-02**	4.63E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	8.64E-01	8.64E-01	8.00E+02	**1E-03**	**1E-03**	3.21E-01	1.10E-05		**4E-06**
BENZENE	71-43-2	6.20E-01	Y	5.95E-01	5.95E-01	3.00E+01	**2E-02**	**2E-02**	2.21E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	6.50E-01	N	6.23E-01	6.23E-01	5.00E+00	**1E-01**	**1E-01**	2.32E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	4.03E-01	4.03E-01	1.00E+02	**4E-03**	**4E-03**	1.50E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	3.50E-01	Y	3.36E-01	3.36E-01	9.77E+01	**3E-03**	**3E-03**	1.25E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	5.50E-01	N	5.27E-01	5.27E-01	7.00E+01	**8E-03**	**8E-03**	1.96E-01	-		---
ETHYLBENZENE	100-41-4	1.80E-01	Y	1.73E-01	1.73E-01	1.00E+03	**2E-04**	**2E-04**	6.41E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL	67-63-0	2.10E+01	Y	2.01E+01	2.01E+01	2.00E+02	**1E-01**	**1E-01**	7.48E+00	-		---
M,P-XYLENE	108-38-3	1.52E+00	Y	1.46E+00	1.46E+00	1.00E+02	**1E-02**	**1E-02**	5.41E-01	-		---
METHYLENE CHLORIDE	75-09-2	2.40E+00	Y	2.30E+00	2.30E+00	6.00E+02	**4E-03**	**4E-03**	M	1.00E-08	M	**2E-08**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.40E-01	Y	1.34E-01	1.34E-01	1.00E+02	**1E-03**	**1E-03**	4.99E-02	-		---
TETRACHLOROETHENE	127-18-4	7.00E-02	Y	6.71E-02	6.71E-02	4.00E+01	**2E-03**	**2E-03**	2.49E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	3.00E+00	Y	2.88E+00	2.88E+00	2.00E+02	**1E-02**	**1E-02**	1.07E+00	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0013H**	**Total Inhalation**	**4E+00**	**4E+00**	**2E-04**
		Based on NDs only	**4E+00**	**4E+00**	**2E-04**
		Based on Detects only	**2E-01**	**2E-01**	**7E-06**
		Site-related only	**1E-01**	**1E-01**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0013H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.40E+00	6.58E-01	3.95E-01	9.86E-01	3.29E-01	1.0E-08		7E-09	4E-09	1E-08	3E-09	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0017H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	9.00E-02	N	8.63E-02	8.63E-02	3.00E+01	**3E-03**	**3E-03**	3.21E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	9.83E-01	Y	9.42E-01	9.42E-01	6.00E+01	**2E-02**	**2E-02**	3.50E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	2.92E-01	2.92E-01	7.00E+00	**4E-02**	**4E-02**	1.09E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	3.55E-01	3.55E-01	6.00E+01	**6E-03**	**6E-03**	1.32E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	4.32E-01	4.32E-01	8.00E+02	**5E-04**	**5E-04**	1.61E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	8.00E-01	Y	7.67E-01	7.67E-01	3.00E+01	**3E-02**	**3E-02**	2.85E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.61E+00	Y	1.54E+00	1.54E+00	9.77E+01	**2E-02**	**2E-02**	5.74E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	3.30E+00	Y	3.16E+00	3.16E+00	7.00E+01	**5E-02**	**5E-02**	1.18E+00	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	3.12E-01	3.12E-01	1.00E+03	**3E-04**	**3E-04**	1.16E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	2.04E+00	Y	1.96E+00	1.96E+00	1.00E+02	**2E-02**	**2E-02**	7.27E-01	-		---
METHYLENE CHLORIDE	75-09-2	8.33E-01	Y	7.99E-01	7.99E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**8E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	3.12E-01	3.12E-01	1.00E+02	**3E-03**	**3E-03**	1.16E-01	-		---
TETRACHLOROETHENE	127-18-4	1.02E+01	Y	9.75E+00	9.75E+00	4.00E+01	**2E-01**	**2E-01**	3.62E+00	2.60E-07		**9E-07**
TRICHLOROETHENE	79-01-6	3.92E-01	Y	3.76E-01	3.76E-01	2.00E+00	**2E-01**	**2E-01**	M	4.10E-06	M	**8E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0017H**	**Total Inhalation**	**3E+00**	**3E+00**	**2E-04**
		Based on NDs only	**2E+00**	**2E+00**	**2E-04**
		Based on Detects only	**6E-01**	**6E-01**	**2E-05**
		Site-related only	**4E-01**	**4E-01**	**2E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0017H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.33E-01	2.28E-01	1.37E-01	3.42E-01	1.14E-01	1.0E-08		2E-09	1E-09	3E-09	1E-09	**8E-09**
TRICHLOROETHENE	79-01-6	3.92E-01	1.07E-01	6.44E-02	1.61E-01	5.37E-02	1.0E-06	kidney	1E-07	6E-08	2E-07	5E-08	**4E-07**
TRICHLOROETHENE	79-01-6	3.92E-01	3.22E-02		1.07E-01		3.1E-06	NHL+liver	1E-07		3E-07		**4E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0018H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-01	Y	2.30E-01	2.30E-01	NA	---	---	8.55E-02	5.80E-05		**5E-06**
1,3-BUTADIENE	106-99-0	4.30E-01	Y	4.12E-01	4.12E-01	2.00E+00	**2E-01**	**2E-01**	1.53E-01	3.00E-05		**5E-06**
1,4-DIOXANE	123-91-1	4.90E-01	Y	4.70E-01	4.70E-01	3.00E+01	**2E-02**	**2E-02**	1.75E-01	5.00E-06		**9E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	4.60E+00	Y	4.41E+00	4.41E+00	2.00E+00	**2E+00**	**2E+00**	1.64E+00	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.80E+00	Y	2.68E+00	2.68E+00	6.00E+01	**4E-02**	**4E-02**	9.97E-01	-		---
1,2-DIBROMOETHANE	106-93-4	9.40E-02	Y	9.01E-02	9.01E-02	9.00E+00	**1E-02**	**1E-02**	3.35E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.30E+00	Y	1.25E+00	1.25E+00	7.00E+00	**2E-01**	**2E-01**	4.63E-01	2.60E-05		**1E-05**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	9.00E-01	Y	8.63E-01	8.63E-01	6.00E+01	**1E-02**	**1E-02**	3.21E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	4.60E-01	Y	4.41E-01	4.41E-01	8.00E+02	**6E-04**	**6E-04**	1.64E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	5.60E+00	Y	5.37E+00	5.37E+00	3.00E+01	**2E-01**	**2E-01**	1.99E+00	7.80E-06		**2E-05**
BENZYL CHLORIDE	100-44-7	8.40E-01	Y	8.05E-01	8.05E-01	1.00E+00	**8E-01**	**8E-01**	2.99E-01	4.90E-05		**1E-05**
BROMODICHLOROMETHANE	75-27-4	4.50E-01	Y	4.32E-01	4.32E-01	NA	---	---	1.60E-01	3.70E-05		**6E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	6.71E-01	6.71E-01	5.00E+00	**1E-01**	**1E-01**	2.49E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	4.41E-01	4.41E-01	1.00E+02	**4E-03**	**4E-03**	1.64E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	2.40E+00	Y	2.30E+00	2.30E+00	9.77E+01	**2E-02**	**2E-02**	8.55E-01	2.30E-05		**2E-05**
ETHYL ACETATE	141-78-6	4.68E+00	Y	4.49E+00	4.49E+00	7.00E+01	**6E-02**	**6E-02**	1.67E+00	-		---
ETHYLBENZENE	100-41-4	2.40E+00	Y	2.30E+00	2.30E+00	1.00E+03	**2E-03**	**2E-03**	8.55E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	5.30E+00	Y	5.08E+00	5.08E+00	NA	---	---	1.89E+00	2.20E-05		**4E-05**
ISOPROPYL ALCOHOL	67-63-0	1.30E+02	Y	1.25E+02	1.25E+02	2.00E+02	**6E-01**	**6E-01**	4.63E+01	-		---
M,P-XYLENE	108-38-3	1.00E+01	Y	9.59E+00	9.59E+00	1.00E+02	**1E-01**	**1E-01**	3.56E+00	-		---
METHYLENE CHLORIDE	75-09-2	1.70E+00	Y	1.63E+00	1.63E+00	6.00E+02	**3E-03**	**3E-03**	M	1.00E-08	M	**2E-08**
NAPHTHALENE	91-20-3	8.30E+00	Y	7.96E+00	7.96E+00	3.00E+00	**3E+00**	**3E+00**	2.96E+00	3.40E-05		**1E-04**
O-XYLENE	95-47-6	3.20E+00	Y	3.07E+00	3.07E+00	1.00E+02	**3E-02**	**3E-02**	1.14E+00	-		---
TETRACHLOROETHENE	127-18-4	1.40E+01	Y	1.34E+01	1.34E+01	4.00E+01	**3E-01**	**3E-01**	4.99E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	8.30E-01	Y	7.96E-01	7.96E-01	2.00E+00	**4E-01**	**4E-01**	M	4.10E-06	M	**2E-06**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0018H**	**Total Inhalation**	**1E+01**	**1E+01**	**3E-04**
		Based on NDs only	**2E+00**	**2E+00**	**3E-06**
		Based on Detects only	**8E+00**	**8E+00**	**2E-04**
		Site-related only	**8E-01**	**8E-01**	**4E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0018H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.70E+00	4.66E-01	2.79E-01	6.99E-01	2.33E-01	1.0E-08		5E-09	3E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	8.30E-01	2.27E-01	1.36E-01	3.41E-01	1.14E-01	1.0E-06	kidney	2E-07	1E-07	3E-07	1E-07	**8E-07**
TRICHLOROETHENE	79-01-6	8.30E-01	6.82E-02		2.27E-01		3.1E-06	NHL+liver	2E-07		7E-07		**9E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0023H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	9.00E-02	N	8.63E-02	8.63E-02	3.00E+01	**3E-03**	**3E-03**	3.21E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.70E-01	N	3.55E-01	3.55E-01	6.00E+01	**6E-03**	**6E-03**	1.32E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	2.92E-01	2.92E-01	7.00E+00	**4E-02**	**4E-02**	1.09E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	3.55E-01	3.55E-01	6.00E+01	**6E-03**	**6E-03**	1.32E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	4.32E-01	4.32E-01	8.00E+02	**5E-04**	**5E-04**	1.61E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	1.40E+00	Y	1.34E+00	1.34E+00	3.00E+01	**4E-02**	**4E-02**	4.99E-01	7.80E-06		**4E-06**
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	3.66E-01	N	3.51E-01	3.51E-01	9.77E+01	**4E-03**	**4E-03**	1.30E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	2.70E-01	N	2.59E-01	2.59E-01	7.00E+01	**4E-03**	**4E-03**	9.62E-02	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	3.12E-01	3.12E-01	1.00E+03	**3E-04**	**3E-04**	1.16E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	2.30E+00	Y	2.21E+00	2.21E+00	1.00E+02	**2E-02**	**2E-02**	8.19E-01	-		---
METHYLENE CHLORIDE	75-09-2	6.40E-01	Y	6.14E-01	6.14E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**6E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	6.94E-01	Y	6.66E-01	6.66E-01	1.00E+02	**7E-03**	**7E-03**	2.47E-01	-		---
TETRACHLOROETHENE	127-18-4	1.40E+00	Y	1.34E+00	1.34E+00	4.00E+01	**3E-02**	**3E-02**	4.99E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	1.35E-01	N	1.29E-01	1.29E-01	2.00E+00	**6E-02**	**6E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0023H**	**Total Inhalation**	**2E+00**	**2E+00**	**2E-04**
		Based on NDs only	**2E+00**	**2E+00**	**2E-04**
		Based on Detects only	**1E-01**	**1E-01**	**4E-06**
		Site-related only	**1E-01**	**1E-01**	**9E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0023H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.40E-01	1.75E-01	1.05E-01	2.63E-01	8.77E-02	1.0E-08		2E-09	1E-09	3E-09	9E-10	**6E-09**
TRICHLOROETHENE	79-01-6	1.35E-01	3.70E-02	2.22E-02	5.55E-02	1.85E-02	1.0E-06	kidney	4E-08	2E-08	6E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.35E-01	1.11E-02		3.70E-02		3.1E-06	NHL+liver	3E-08		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0025H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	2.34E+00	Y	2.24E+00	2.24E+00	3.00E+01	**7E-02**	**7E-02**	8.34E-01	5.00E-06		**4E-06**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.60E-01	Y	2.49E-01	2.49E-01	6.00E+01	**4E-03**	**4E-03**	9.26E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.30E-01	Y	3.16E-01	3.16E-01	7.00E+00	**5E-02**	**5E-02**	1.18E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	2.10E+00	Y	2.01E+00	2.01E+00	8.00E+02	**3E-03**	**3E-03**	7.48E-01	1.10E-05		**8E-06**
BENZENE	71-43-2	8.30E-01	Y	7.96E-01	7.96E-01	3.00E+01	**3E-02**	**3E-02**	2.96E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	7.67E-01	7.67E-01	5.00E+00	**2E-01**	**2E-01**	2.85E-01	-		---
CARBON TETRACHLORIDE	56-23-5	5.60E-01	Y	5.37E-01	5.37E-01	1.00E+02	**5E-03**	**5E-03**	1.99E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.90E+00	Y	1.82E+00	1.82E+00	9.77E+01	**2E-02**	**2E-02**	6.77E-01	2.30E-05		**2E-05**
ETHYL ACETATE	141-78-6	3.90E+00	Y	3.74E+00	3.74E+00	7.00E+01	**5E-02**	**5E-02**	1.39E+00	-		---
ETHYLBENZENE	100-41-4	2.10E-01	Y	2.01E-01	2.01E-01	1.00E+03	**2E-04**	**2E-04**	7.48E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL	67-63-0	7.70E+00	Y	7.38E+00	7.38E+00	2.00E+02	**4E-02**	**4E-02**	2.74E+00	-		---
M,P-XYLENE	108-38-3	1.30E+00	Y	1.25E+00	1.25E+00	1.00E+02	**1E-02**	**1E-02**	4.63E-01	-		---
METHYLENE CHLORIDE	75-09-2	3.33E+00	Y	3.20E+00	3.20E+00	6.00E+02	**5E-03**	**5E-03**	M	1.00E-08	M	**3E-08**
NAPHTHALENE	91-20-3	8.80E-02	Y	8.44E-02	8.44E-02	3.00E+00	**3E-02**	**3E-02**	3.13E-02	3.40E-05		**1E-06**
O-XYLENE	95-47-6	3.10E-01	Y	2.97E-01	2.97E-01	1.00E+02	**3E-03**	**3E-03**	1.10E-01	-		---
TETRACHLOROETHENE	127-18-4	4.40E-01	Y	4.22E-01	4.22E-01	4.00E+01	**1E-02**	**1E-02**	1.57E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	3.37E-01	3.37E-01	2.00E+02	**2E-03**	**2E-03**	1.25E-01	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0025H**	**Total Inhalation**	**4E+00**	**4E+00**	**2E-04**
		Based on NDs only	**4E+00**	**4E+00**	**2E-04**
		Based on Detects only	**3E-01**	**3E-01**	**4E-05**
		Site-related only	**2E-01**	**2E-01**	**5E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0025H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.33E+00	9.13E-01	5.48E-01	1.37E+00	4.57E-01	1.0E-08		9E-09	5E-09	1E-08	5E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0026H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	2.60E-01	Y	2.49E-01	2.49E-01	3.00E+01	**8E-03**	**8E-03**	9.26E-02	5.00E-06		**5E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.80E-01	Y	8.44E-01	8.44E-01	2.00E-01	**4E+00**	**4E+00**	3.13E-01	1.60E-05		**5E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E+00	Y	1.53E+00	1.53E+00	6.00E+01	**3E-02**	**3E-02**	5.70E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.00E+00	Y	2.88E+00	2.88E+00	7.00E+00	**4E-01**	**4E-01**	1.07E+00	2.60E-05		**3E-05**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	2.50E-01	Y	2.40E-01	2.40E-01	6.00E+01	**4E-03**	**4E-03**	8.90E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	8.40E-02	Y	8.05E-02	8.05E-02	8.00E+02	**1E-04**	**1E-04**	2.99E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	7.70E-01	Y	7.38E-01	7.38E-01	3.00E+01	**2E-02**	**2E-02**	2.74E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
BROMODICHLOROMETHANE	75-27-4	6.10E-01	Y	5.85E-01	5.85E-01	NA	---	---	2.17E-01	3.70E-05		**8E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	7.67E-01	7.67E-01	5.00E+00	**2E-01**	**2E-01**	2.85E-01	-		---
CARBON TETRACHLORIDE	56-23-5	5.20E-01	Y	4.99E-01	4.99E-01	1.00E+02	**5E-03**	**5E-03**	1.85E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	2.60E+00	Y	2.49E+00	2.49E+00	9.77E+01	**3E-02**	**3E-02**	9.26E-01	2.30E-05		**2E-05**
ETHYL ACETATE	141-78-6	5.10E+00	Y	4.89E+00	4.89E+00	7.00E+01	**7E-02**	**7E-02**	1.82E+00	-		---
ETHYLBENZENE	100-41-4	2.30E+00	Y	2.21E+00	2.21E+00	1.00E+03	**2E-03**	**2E-03**	8.19E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL	67-63-0	2.90E+01	Y	2.78E+01	2.78E+01	2.00E+02	**1E-01**	**1E-01**	1.03E+01	-		---
M,P-XYLENE	108-38-3	9.12E+00	Y	8.75E+00	8.75E+00	1.00E+02	**9E-02**	**9E-02**	3.25E+00	-		---
METHYLENE CHLORIDE	75-09-2	2.22E+00	Y	2.13E+00	2.13E+00	6.00E+02	**4E-03**	**4E-03**	M	1.00E-08	M	**2E-08**
NAPHTHALENE	91-20-3	3.00E-02	N	2.88E-02	2.88E-02	3.00E+00	**1E-02**	**1E-02**	1.07E-02	3.40E-05		**4E-07**
O-XYLENE	95-47-6	2.10E+00	Y	2.01E+00	2.01E+00	1.00E+02	**2E-02**	**2E-02**	7.48E-01	-		---
TETRACHLOROETHENE	127-18-4	1.20E+01	Y	1.15E+01	1.15E+01	4.00E+01	**3E-01**	**3E-01**	4.27E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	2.50E-01	Y	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	3.37E-01	3.37E-01	2.00E+02	**2E-03**	**2E-03**	1.25E-01	-		---
VINYL CHLORIDE	75-01-4	1.60E-02	Y	1.53E-02	1.53E-02	8.00E+01	**2E-04**	**2E-04**	M	4.40E-06	M	**7E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0026H**	**Total Inhalation**	**8E+00**	**8E+00**	**2E-04**
		Based on NDs only	**2E+00**	**2E+00**	**2E-04**
		Based on Detects only	**5E+00**	**5E+00**	**7E-05**
		Site-related only	**4E-01**	**4E-01**	**2E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0026H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.22E+00	6.09E-01	3.65E-01	9.13E-01	3.04E-01	1.0E-08		6E-09	4E-09	9E-09	3E-09	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	1.60E-02	4.38E-03	2.63E-03	6.58E-03	2.19E-03	4.4E-06		2E-08	1E-08	3E-08	1E-08	**7E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0027H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	9.00E-02	N	8.63E-02	8.63E-02	3.00E+01	**3E-03**	**3E-03**	3.21E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.11E+00	Y	2.99E+00	2.99E+00	7.00E+00	**4E-01**	**4E-01**	1.11E+00	2.60E-05		**3E-05**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	3.42E+00	Y	3.28E+00	3.28E+00	8.00E+02	**4E-03**	**4E-03**	1.22E+00	1.10E-05		**1E-05**
BENZENE	71-43-2	7.34E-01	Y	7.04E-01	7.04E-01	3.00E+01	**2E-02**	**2E-02**	2.62E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	3.66E-01	N	3.51E-01	3.51E-01	9.77E+01	**4E-03**	**4E-03**	1.30E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	1.10E+00	Y	1.05E+00	1.05E+00	7.00E+01	**2E-02**	**2E-02**	3.92E-01	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	3.12E-01	3.12E-01	1.00E+03	**3E-04**	**3E-04**	1.16E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.35E+00	Y	1.29E+00	1.29E+00	1.00E+02	**1E-02**	**1E-02**	4.81E-01	-		---
METHYLENE CHLORIDE	75-09-2	1.25E+00	Y	1.20E+00	1.20E+00	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**1E-08**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	3.12E-01	3.12E-01	1.00E+02	**3E-03**	**3E-03**	1.16E-01	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	3.36E-01	3.36E-01	4.00E+01	**8E-03**	**8E-03**	1.25E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	3.37E-01	3.37E-01	2.00E+02	**2E-03**	**2E-03**	1.25E-01	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0027H**	**Total Inhalation**	**5E+00**	**5E+00**	**2E-04**
		Based on NDs only	**4E+00**	**4E+00**	**2E-04**
		Based on Detects only	**5E-01**	**5E-01**	**4E-05**
		Site-related only	**1E-01**	**1E-01**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0027H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.25E+00	3.42E-01	2.05E-01	5.14E-01	1.71E-01	1.0E-08		3E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0029H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	2.80E-01	Y	2.68E-01	2.68E-01	3.00E+01	**9E-03**	**9E-03**	9.97E-02	5.00E-06		**5E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E-01	Y	1.53E-01	1.53E-01	6.00E+01	**3E-03**	**3E-03**	5.70E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	7.90E-02	Y	7.58E-02	7.58E-02	7.00E+00	**1E-02**	**1E-02**	2.81E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	8.64E-01	8.64E-01	8.00E+02	**1E-03**	**1E-03**	3.21E-01	1.10E-05		**4E-06**
BENZENE	71-43-2	1.31E+00	Y	1.26E+00	1.26E+00	3.00E+01	**4E-02**	**4E-02**	4.66E-01	7.80E-06		**4E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	6.71E-01	6.71E-01	5.00E+00	**1E-01**	**1E-01**	2.49E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	3.84E-01	3.84E-01	1.00E+02	**4E-03**	**4E-03**	1.42E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	1.00E+00	Y	9.59E-01	9.59E-01	9.77E+01	**1E-02**	**1E-02**	3.56E-01	2.30E-05		**8E-06**
ETHYL ACETATE	141-78-6	5.50E-01	N	5.27E-01	5.27E-01	7.00E+01	**8E-03**	**8E-03**	1.96E-01	-		---
ETHYLBENZENE	100-41-4	1.80E-01	Y	1.73E-01	1.73E-01	1.00E+03	**2E-04**	**2E-04**	6.41E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL	67-63-0	1.70E+01	Y	1.63E+01	1.63E+01	2.00E+02	**8E-02**	**8E-02**	6.05E+00	-		---
M,P-XYLENE	108-38-3	2.21E+00	Y	2.12E+00	2.12E+00	1.00E+02	**2E-02**	**2E-02**	7.87E-01	-		---
METHYLENE CHLORIDE	75-09-2	1.91E+01	Y	1.83E+01	1.83E+01	6.00E+02	**3E-02**	**3E-02**	M	1.00E-08	M	**2E-07**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.80E-01	Y	1.73E-01	1.73E-01	1.00E+02	**2E-03**	**2E-03**	6.41E-02	-		---
TETRACHLOROETHENE	127-18-4	6.58E+00	Y	6.31E+00	6.31E+00	4.00E+01	**2E-01**	**2E-01**	2.34E+00	2.60E-07		**6E-07**
TRICHLOROETHENE	79-01-6	3.70E-02	Y	3.55E-02	3.55E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	3.37E-01	3.37E-01	2.00E+02	**2E-03**	**2E-03**	1.25E-01	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0029H**	**Total Inhalation**	**4E+00**	**4E+00**	**2E-04**
		Based on NDs only	**4E+00**	**4E+00**	**2E-04**
		Based on Detects only	**4E-01**	**4E-01**	**1E-05**
		Site-related only	**2E-01**	**2E-01**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0029H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.91E+01	5.23E+00	3.14E+00	7.85E+00	2.62E+00	1.0E-08		5E-08	3E-08	8E-08	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	3.70E-02	1.01E-02	6.08E-03	1.52E-02	5.07E-03	1.0E-06	kidney	1E-08	6E-09	2E-08	5E-09	**4E-08**
TRICHLOROETHENE	79-01-6	3.70E-02	3.04E-03		1.01E-02		3.1E-06	NHL+liver	9E-09		3E-08		**4E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0030H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	1.07E+00	1.07E+00	2.00E+00	**5E-01**	**5E-01**	3.96E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.21E+00	Y	2.12E+00	2.12E+00	6.00E+01	**4E-02**	**4E-02**	7.87E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	9.30E-01	Y	8.92E-01	8.92E-01	7.00E+00	**1E-01**	**1E-01**	3.31E-01	2.60E-05		**9E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	9.00E-01	Y	8.63E-01	8.63E-01	6.00E+01	**1E-02**	**1E-02**	3.21E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	4.32E-01	4.32E-01	8.00E+02	**5E-04**	**5E-04**	1.61E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	1.12E+00	Y	1.07E+00	1.07E+00	3.00E+01	**4E-02**	**4E-02**	3.98E-01	7.80E-06		**3E-06**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	7.67E-01	7.67E-01	1.00E+00	**8E-01**	**8E-01**	2.85E-01	4.90E-05		**1E-05**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	3.66E-01	N	3.51E-01	3.51E-01	9.77E+01	**4E-03**	**4E-03**	1.30E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	3.70E+00	Y	3.55E+00	3.55E+00	7.00E+01	**5E-02**	**5E-02**	1.32E+00	-		---
ETHYLBENZENE	100-41-4	1.13E+00	Y	1.08E+00	1.08E+00	1.00E+03	**1E-03**	**1E-03**	4.02E-01	2.50E-06		**1E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	4.80E+00	Y	4.60E+00	4.60E+00	1.00E+02	**5E-02**	**5E-02**	1.71E+00	-		---
METHYLENE CHLORIDE	75-09-2	1.11E+00	Y	1.07E+00	1.07E+00	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**1E-08**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.60E+00	Y	1.53E+00	1.53E+00	1.00E+02	**2E-02**	**2E-02**	5.70E-01	-		---
TETRACHLOROETHENE	127-18-4	5.90E+00	Y	5.66E+00	5.66E+00	4.00E+01	**1E-01**	**1E-01**	2.10E+00	2.60E-07		**5E-07**
TRICHLOROETHENE	79-01-6	4.05E-01	N	3.88E-01	3.88E-01	2.00E+00	**2E-01**	**2E-01**	M	4.10E-06	M	**8E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	1.84E-01	1.84E-01	8.00E+01	**2E-03**	**2E-03**	M	4.40E-06	M	**8E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0030H**	**Total Inhalation**	**4E+00**	**4E+00**	**2E-04**
		Based on NDs only	**4E+00**	**4E+00**	**2E-04**
		Based on Detects only	**5E-01**	**5E-01**	**1E-05**
		Site-related only	**3E-01**	**3E-01**	**2E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0030H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.11E+00	3.04E-01	1.83E-01	4.57E-01	1.52E-01	1.0E-08		3E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	1.11E-01	6.66E-02	1.66E-01	5.55E-02	1.0E-06	kidney	1E-07	7E-08	2E-07	6E-08	**4E-07**
TRICHLOROETHENE	79-01-6	4.05E-01	3.33E-02		1.11E-01		3.1E-06	NHL+liver	1E-07		3E-07		**4E-07**
VINYL CHLORIDE	75-01-4	1.92E-01	5.25E-02	3.15E-02	7.87E-02	2.62E-02	4.4E-06		2E-07	1E-07	3E-07	1E-07	**8E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0036H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	1.07E+00	1.07E+00	2.00E+00	**5E-01**	**5E-01**	3.96E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.70E-01	N	3.55E-01	3.55E-01	6.00E+01	**6E-03**	**6E-03**	1.32E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	2.92E-01	2.92E-01	7.00E+00	**4E-02**	**4E-02**	1.09E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	3.55E-01	3.55E-01	6.00E+01	**6E-03**	**6E-03**	1.32E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	4.32E-01	4.32E-01	8.00E+02	**5E-04**	**5E-04**	1.61E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	1.15E+00	Y	1.10E+00	1.10E+00	3.00E+01	**4E-02**	**4E-02**	4.09E-01	7.80E-06		**3E-06**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	7.67E-01	7.67E-01	1.00E+00	**8E-01**	**8E-01**	2.85E-01	4.90E-05		**1E-05**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.10E+00	Y	1.05E+00	1.05E+00	9.77E+01	**1E-02**	**1E-02**	3.92E-01	2.30E-05		**9E-06**
ETHYL ACETATE	141-78-6	6.12E+00	Y	5.87E+00	5.87E+00	7.00E+01	**8E-02**	**8E-02**	2.18E+00	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	3.12E-01	3.12E-01	1.00E+03	**3E-04**	**3E-04**	1.16E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	8.30E-01	Y	7.96E-01	7.96E-01	1.00E+02	**8E-03**	**8E-03**	2.96E-01	-		---
METHYLENE CHLORIDE	75-09-2	1.10E+00	Y	1.05E+00	1.05E+00	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**1E-08**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	3.12E-01	3.12E-01	1.00E+02	**3E-03**	**3E-03**	1.16E-01	-		---
TETRACHLOROETHENE	127-18-4	3.60E+00	Y	3.45E+00	3.45E+00	4.00E+01	**9E-02**	**9E-02**	1.28E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	4.05E-01	N	3.88E-01	3.88E-01	2.00E+00	**2E-01**	**2E-01**	M	4.10E-06	M	**8E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	1.84E-01	1.84E-01	8.00E+01	**2E-03**	**2E-03**	M	4.40E-06	M	**8E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0036H**	**Total Inhalation**	**4E+00**	**4E+00**	**2E-04**
		Based on NDs only	**4E+00**	**4E+00**	**2E-04**
		Based on Detects only	**2E-01**	**2E-01**	**1E-05**
		Site-related only	**3E-01**	**3E-01**	**2E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0036H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.10E+00	3.01E-01	1.81E-01	4.52E-01	1.51E-01	1.0E-08		3E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	1.11E-01	6.66E-02	1.66E-01	5.55E-02	1.0E-06	kidney	1E-07	7E-08	2E-07	6E-08	**4E-07**
TRICHLOROETHENE	79-01-6	4.05E-01	3.33E-02		1.11E-01		3.1E-06	NHL+liver	1E-07		3E-07		**4E-07**
VINYL CHLORIDE	75-01-4	1.92E-01	5.25E-02	3.15E-02	7.87E-02	2.62E-02	4.4E-06		2E-07	1E-07	3E-07	1E-07	**8E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0037H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-01	Y	1.05E-01	1.05E-01	NA	---	---	3.92E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	3.00E-01	Y	2.88E-01	2.88E-01	2.00E+00	**1E-01**	**1E-01**	1.07E-01	3.00E-05		**3E-06**
1,4-DIOXANE	123-91-1	1.70E+00	Y	1.63E+00	1.63E+00	3.00E+01	**5E-02**	**5E-02**	6.05E-01	5.00E-06		**3E-06**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.60E+00	N	1.53E+00	1.53E+00	2.00E+00	**8E-01**	**8E-01**	5.70E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.40E+00	Y	5.18E+00	5.18E+00	6.00E+01	**9E-02**	**9E-02**	1.92E+00	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	7.00E+00	Y	6.71E+00	6.71E+00	7.00E+00	**1E+00**	**1E+00**	2.49E+00	2.60E-05		**6E-05**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	1.20E+00	Y	1.15E+00	1.15E+00	6.00E+01	**2E-02**	**2E-02**	4.27E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	4.32E-01	4.32E-01	8.00E+02	**5E-04**	**5E-04**	1.61E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	3.70E+00	Y	3.55E+00	3.55E+00	3.00E+01	**1E-01**	**1E-01**	1.32E+00	7.80E-06		**1E-05**
BENZYL CHLORIDE	100-44-7	1.20E-01	N	1.15E-01	1.15E-01	1.00E+00	**1E-01**	**1E-01**	4.27E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	5.70E-01	Y	5.47E-01	5.47E-01	NA	---	---	2.03E-01	3.70E-05		**8E-06**
BROMOMETHANE	74-83-9	4.00E-01	N	3.84E-01	3.84E-01	5.00E+00	**8E-02**	**8E-02**	1.42E-01	-		---
CARBON TETRACHLORIDE	56-23-5	5.50E-01	Y	5.27E-01	5.27E-01	1.00E+02	**5E-03**	**5E-03**	1.96E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	3.20E+00	Y	3.07E+00	3.07E+00	9.77E+01	**3E-02**	**3E-02**	1.14E+00	2.30E-05		**3E-05**
ETHYL ACETATE	141-78-6	2.40E+00	Y	2.30E+00	2.30E+00	7.00E+01	**3E-02**	**3E-02**	8.55E-01	-		---
ETHYLBENZENE	100-41-4	3.80E+00	Y	3.64E+00	3.64E+00	1.00E+03	**4E-03**	**4E-03**	1.35E+00	2.50E-06		**3E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	2.15E+00	N	2.06E+00	2.06E+00	NA	---	---	7.66E-01	2.20E-05		**2E-05**
ISOPROPYL ALCOHOL	67-63-0	7.50E+01	Y	7.19E+01	7.19E+01	2.00E+02	**4E-01**	**4E-01**	2.67E+01	-		---
M,P-XYLENE	108-38-3	1.60E+01	Y	1.53E+01	1.53E+01	1.00E+02	**2E-01**	**2E-01**	5.70E+00	-		---
METHYLENE CHLORIDE	75-09-2	8.20E-01	Y	7.86E-01	7.86E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**8E-09**
NAPHTHALENE	91-20-3	7.20E-02	Y	6.90E-02	6.90E-02	3.00E+00	**2E-02**	**2E-02**	2.56E-02	3.40E-05		**9E-07**
O-XYLENE	95-47-6	5.60E+00	Y	5.37E+00	5.37E+00	1.00E+02	**5E-02**	**5E-02**	1.99E+00	-		---
TETRACHLOROETHENE	127-18-4	8.70E+00	Y	8.34E+00	8.34E+00	4.00E+01	**2E-01**	**2E-01**	3.10E+00	2.60E-07		**8E-07**
TRICHLOROETHENE	79-01-6	1.00E-01	Y	9.59E-02	9.59E-02	2.00E+00	**5E-02**	**5E-02**	M	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0037H**	**Total Inhalation**	**5E+00**	**5E+00**	**3E-04**
		Based on NDs only	**3E+00**	**3E+00**	**2E-04**
		Based on Detects only	**2E+00**	**2E+00**	**1E-04**
		Site-related only	**3E-01**	**3E-01**	**4E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0037H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.20E-01	2.25E-01	1.35E-01	3.37E-01	1.12E-01	1.0E-08		2E-09	1E-09	3E-09	1E-09	**8E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	2.74E-02	1.64E-02	4.11E-02	1.37E-02	1.0E-06	kidney	3E-08	2E-08	4E-08	1E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.00E-01	8.22E-03		2.74E-02		3.1E-06	NHL+liver	3E-08		8E-08		**1E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0038H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	9.00E-02	N	8.63E-02	8.63E-02	3.00E+01	**3E-03**	**3E-03**	3.21E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	2.92E-01	2.92E-01	7.00E+00	**4E-02**	**4E-02**	1.09E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	8.64E-01	8.64E-01	8.00E+02	**1E-03**	**1E-03**	3.21E-01	1.10E-05		**4E-06**
BENZENE	71-43-2	5.11E-01	Y	4.90E-01	4.90E-01	3.00E+01	**2E-02**	**2E-02**	1.82E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.42E+00	Y	1.36E+00	1.36E+00	9.77E+01	**1E-02**	**1E-02**	5.04E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	5.50E-01	N	5.27E-01	5.27E-01	7.00E+01	**8E-03**	**8E-03**	1.96E-01	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	3.12E-01	3.12E-01	1.00E+03	**3E-04**	**3E-04**	1.16E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.30E+00	Y	1.25E+00	1.25E+00	1.00E+02	**1E-02**	**1E-02**	4.63E-01	-		---
METHYLENE CHLORIDE	75-09-2	3.12E+00	Y	3.00E+00	3.00E+00	6.00E+02	**5E-03**	**5E-03**	M	1.00E-08	M	**3E-08**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	3.12E-01	3.12E-01	1.00E+02	**3E-03**	**3E-03**	1.16E-01	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	3.36E-01	3.36E-01	4.00E+01	**8E-03**	**8E-03**	1.25E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	3.37E-01	3.37E-01	2.00E+02	**2E-03**	**2E-03**	1.25E-01	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0038H**	**Total Inhalation**	**4E+00**	**4E+00**	**2E-04**
		Based on NDs only	**4E+00**	**4E+00**	**2E-04**
		Based on Detects only	**5E-02**	**5E-02**	**1E-05**
		Site-related only	**1E-01**	**1E-01**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0038H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.12E+00	8.56E-01	5.14E-01	1.28E+00	4.28E-01	1.0E-08		9E-09	5E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0040H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.44E+00	Y	1.38E+00	1.38E+00	2.00E+00	**7E-01**	**7E-01**	5.12E-01	3.00E-05		**2E-05**
1,4-DIOXANE	123-91-1	9.00E-02	N	8.63E-02	8.63E-02	3.00E+01	**3E-03**	**3E-03**	3.21E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.10E+00	Y	3.93E+00	3.93E+00	6.00E+01	**7E-02**	**7E-02**	1.46E+00	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	2.92E-01	2.92E-01	7.00E+00	**4E-02**	**4E-02**	1.09E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	1.10E+00	Y	1.05E+00	1.05E+00	6.00E+01	**2E-02**	**2E-02**	3.92E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	4.32E-01	4.32E-01	8.00E+02	**5E-04**	**5E-04**	1.61E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	2.60E+00	Y	2.49E+00	2.49E+00	3.00E+01	**8E-02**	**8E-02**	9.26E-01	7.80E-06		**7E-06**
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	4.80E+00	Y	4.60E+00	4.60E+00	9.77E+01	**5E-02**	**5E-02**	1.71E+00	2.30E-05		**4E-05**
ETHYL ACETATE	141-78-6	1.30E+00	Y	1.25E+00	1.25E+00	7.00E+01	**2E-02**	**2E-02**	4.63E-01	-		---
ETHYLBENZENE	100-41-4	2.20E+00	Y	2.11E+00	2.11E+00	1.00E+03	**2E-03**	**2E-03**	7.84E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	7.90E+00	Y	7.58E+00	7.58E+00	1.00E+02	**8E-02**	**8E-02**	2.81E+00	-		---
METHYLENE CHLORIDE	75-09-2	2.60E+02	Y	2.49E+02	2.49E+02	6.00E+02	**4E-01**	**4E-01**	M	1.00E-08	M	**3E-06**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.34E+00	Y	2.25E+00	2.25E+00	1.00E+02	**2E-02**	**2E-02**	8.35E-01	-		---
TETRACHLOROETHENE	127-18-4	1.53E+02	Y	1.47E+02	1.47E+02	4.00E+01	**4E+00**	**4E+00**	5.45E+01	2.60E-07		**1E-05**
TRICHLOROETHENE	79-01-6	1.26E+01	Y	1.21E+01	1.21E+01	2.00E+00	**6E+00**	**6E+00**	M	4.10E-06	M	**3E-05**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0040H**	**Total Inhalation**	**1E+01**	**1E+01**	**3E-04**
		Based on NDs only	**2E+00**	**2E+00**	**2E-04**
		Based on Detects only	**1E+01**	**1E+01**	**1E-04**
		Site-related only	**1E+01**	**1E+01**	**4E-05**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0040H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.60E+02	7.12E+01	4.27E+01	1.07E+02	3.56E+01	1.0E-08		7E-07	4E-07	1E-06	4E-07	**3E-06**
TRICHLOROETHENE	79-01-6	1.26E+01	3.45E+00	2.07E+00	5.18E+00	1.73E+00	1.0E-06	kidney	3E-06	2E-06	5E-06	2E-06	**1E-05**
TRICHLOROETHENE	79-01-6	1.26E+01	1.04E+00		3.45E+00		3.1E-06	NHL+liver	3E-06		1E-05		**1E-05**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0041H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	1.01E-02	1.01E-02	NA	---	---	3.74E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	4.90E-02	N	4.70E-02	4.70E-02	2.00E+00	**2E-02**	**2E-02**	1.75E-02	3.00E-05		**5E-07**
1,4-DIOXANE	123-91-1	7.00E-02	N	6.71E-02	6.71E-02	3.00E+01	**2E-03**	**2E-03**	2.49E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	6.71E-03	6.71E-03	2.00E-01	**3E-02**	**3E-02**	2.49E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.80E-01	N	4.60E-01	4.60E-01	2.00E+00	**2E-01**	**2E-01**	1.71E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E-01	Y	1.34E-01	1.34E-01	6.00E+01	**2E-03**	**2E-03**	4.99E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	3.16E-02	3.16E-02	9.00E+00	**4E-03**	**4E-03**	1.18E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	5.10E-01	Y	4.89E-01	4.89E-01	7.00E+00	**7E-02**	**7E-02**	1.82E-01	2.60E-05		**5E-06**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	8.63E-02	8.63E-02	4.00E+00	**2E-02**	**2E-02**	3.21E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	5.75E-02	5.75E-02	6.00E+01	**1E-03**	**1E-03**	2.14E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	4.79E-02	4.79E-02	8.00E+02	**6E-05**	**6E-05**	1.78E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	4.80E-01	Y	4.60E-01	4.60E-01	3.00E+01	**2E-02**	**2E-02**	1.71E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	8.15E-02	8.15E-02	1.00E+00	**8E-02**	**8E-02**	3.03E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	1.20E-01	1.20E-01	NA	---	---	4.45E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	6.50E-01	N	6.23E-01	6.23E-01	5.00E+00	**1E-01**	**1E-01**	2.32E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	4.12E-01	4.12E-01	1.00E+02	**4E-03**	**4E-03**	1.53E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	9.00E-01	Y	8.63E-01	8.63E-01	9.77E+01	**9E-03**	**9E-03**	3.21E-01	2.30E-05		**7E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.40E-01	Y	1.34E-01	1.34E-01	1.00E+03	**1E-04**	**1E-04**	4.99E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	6.23E-01	6.23E-01	NA	**---**	**---**	2.32E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL	67-63-0	2.70E+01	Y	2.59E+01	2.59E+01	2.00E+02	**1E-01**	**1E-01**	9.62E+00	-		**---**
M,P-XYLENE	108-38-3	4.00E-01	Y	3.84E-01	3.84E-01	1.00E+02	**4E-03**	**4E-03**	1.42E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.20E-01	N	3.07E-01	3.07E-01	6.00E+02	**5E-04**	**5E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.40E-01	Y	1.34E-01	1.34E-01	1.00E+02	**1E-03**	**1E-03**	4.99E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.60E+00	Y	4.41E+00	4.41E+00	4.00E+01	**1E-01**	**1E-01**	1.64E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	8.00E-03	N	7.67E-03	7.67E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0041H**	**Total Inhalation**	**1E+00**	**1E+00**	**3E-05**
		Based on NDs only	**6E-01**	**6E-01**	**2E-05**
		Based on Detects only	**3E-01**	**3E-01**	**1E-05**
		Site-related only	**2E-01**	**2E-01**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0041H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.20E-01	8.77E-02	5.26E-02	1.32E-01	4.38E-02	1.0E-08		9E-10	5E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	8.00E-03	2.19E-03	1.32E-03	3.29E-03	1.10E-03	4.4E-06		1E-08	6E-09	1E-08	5E-09	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0047H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	9.59E-01	9.59E-01		TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	9.00E+00	Y	8.63E+00	8.63E+00	4.00E+01	**2E-01**	**2E-01**	3.21E+00	2.60E-07		**8E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0047H**	**Total Inhalation**	**3E-01**	**3E-01**	**1E-06**
		Based on NDs only	**1E-01**	**1E-01**	**5E-07**
		Based on Detects only	**2E-01**	**2E-01**	**8E-07**
		Site-related only	**3E-01**	**3E-01**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0047H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0050H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	3.36E-01	3.36E-01	4.00E+01	**8E-03**	**8E-03**	1.25E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0050H**	**Total Inhalation**	**1E-01**	**1E-01**	**6E-07**
		Based on NDs only	**1E-01**	**1E-01**	**6E-07**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**1E-01**	**1E-01**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0050H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0051H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	2.20E-01	Y	2.11E-01	2.11E-01	3.00E+01	**7E-03**	**7E-03**	7.84E-02	5.00E-06		**4E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.20E+00	N	1.15E+00	1.15E+00	2.00E+00	**6E-01**	**6E-01**	4.27E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.80E-01	Y	7.48E-01	7.48E-01	6.00E+01	**1E-02**	**1E-02**	2.78E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	1.34E-01	1.34E-01	7.00E+00	**2E-02**	**2E-02**	4.99E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	3.55E-01	3.55E-01	6.00E+01	**6E-03**	**6E-03**	1.32E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	2.10E-01	Y	2.01E-01	2.01E-01	8.00E+02	**3E-04**	**3E-04**	7.48E-02	1.10E-05		**8E-07**
BENZENE	71-43-2	6.30E-01	Y	6.04E-01	6.04E-01	3.00E+01	**2E-02**	**2E-02**	2.24E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	2.35E-01	N	2.25E-01	2.25E-01	1.00E+00	**2E-01**	**2E-01**	8.37E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	3.60E-01	Y	3.45E-01	3.45E-01	NA	---	---	1.28E-01	3.70E-05		**5E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	7.67E-01	7.67E-01	5.00E+00	**2E-01**	**2E-01**	2.85E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	4.60E-01	4.60E-01	1.00E+02	**5E-03**	**5E-03**	1.71E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	2.10E+00	Y	2.01E+00	2.01E+00	9.77E+01	**2E-02**	**2E-02**	7.48E-01	2.30E-05		**2E-05**
ETHYL ACETATE	141-78-6	7.60E+00	Y	7.29E+00	7.29E+00	7.00E+01	**1E-01**	**1E-01**	2.71E+00	-		---
ETHYLBENZENE	100-41-4	9.50E-01	Y	9.11E-01	9.11E-01	1.00E+03	**9E-04**	**9E-04**	3.38E-01	2.50E-06		**8E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	9.50E-01	N	9.11E-01	9.11E-01	NA	---	---	3.38E-01	2.20E-05		**7E-06**
ISOPROPYL ALCOHOL	67-63-0	5.20E+02	Y	4.99E+02	4.99E+02	2.00E+02	**2E+00**	**2E+00**	1.85E+02	-		---
M,P-XYLENE	108-38-3	3.00E+00	Y	2.88E+00	2.88E+00	1.00E+02	**3E-02**	**3E-02**	1.07E+00	-		---
METHYLENE CHLORIDE	75-09-2	9.40E-01	Y	9.01E-01	9.01E-01	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**9E-09**
NAPHTHALENE	91-20-3	8.30E-02	Y	7.96E-02	7.96E-02	3.00E+00	**3E-02**	**3E-02**	2.96E-02	3.40E-05		**1E-06**
O-XYLENE	95-47-6	9.10E-01	Y	8.73E-01	8.73E-01	1.00E+02	**9E-03**	**9E-03**	3.24E-01	-		---
TETRACHLOROETHENE	127-18-4	4.02E+02	Y	3.86E+02	3.86E+02	4.00E+01	**1E+01**	**1E+01**	1.43E+02	2.60E-07		**4E-05**
TRICHLOROETHENE	79-01-6	6.00E-02	Y	5.75E-02	5.75E-02	2.00E+00	**3E-02**	**3E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	1.83E+00	Y	1.75E+00	1.75E+00	2.00E+02	**9E-03**	**9E-03**	6.52E-01	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0051H**	**Total Inhalation**	**2E+01**	**2E+01**	**2E-04**
		Based on NDs only	**3E+00**	**3E+00**	**2E-04**
		Based on Detects only	**1E+01**	**1E+01**	**7E-05**
		Site-related only	**1E+01**	**1E+01**	**4E-05**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0051H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.40E-01	2.58E-01	1.55E-01	3.86E-01	1.29E-01	1.0E-08		3E-09	2E-09	4E-09	1E-09	**9E-09**
TRICHLOROETHENE	79-01-6	6.00E-02	1.64E-02	9.86E-03	2.47E-02	8.22E-03	1.0E-06	kidney	2E-08	1E-08	2E-08	8E-09	**6E-08**
TRICHLOROETHENE	79-01-6	6.00E-02	4.93E-03		1.64E-02		3.1E-06	NHL+liver	2E-08		5E-08		**7E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0052H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.90E+00	Y	1.82E+00	1.82E+00	4.00E+01	**5E-02**	**5E-02**	6.77E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0052H**	**Total Inhalation**	**2E-01**	**2E-01**	**7E-07**
		Based on NDs only	**1E-01**	**1E-01**	**5E-07**
		Based on Detects only	**5E-02**	**5E-02**	**2E-07**
		Site-related only	**2E-01**	**2E-01**	**7E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0052H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0053H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.90E-01	Y	1.82E-01	1.82E-01	2.00E+00	**9E-02**	**9E-02**	6.77E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	2.10E-01	N	2.01E-01	2.01E-01	3.00E+01	**7E-03**	**7E-03**	7.48E-02	5.00E-06		**4E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.45E+00	N	1.39E+00	1.39E+00	2.00E+00	**7E-01**	**7E-01**	5.16E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	6.10E-01	Y	5.85E-01	5.85E-01	6.00E+01	**1E-02**	**1E-02**	2.17E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	7.60E-02	Y	7.29E-02	7.29E-02	7.00E+00	**1E-02**	**1E-02**	2.71E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	3.55E-01	3.55E-01	6.00E+01	**6E-03**	**6E-03**	1.32E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	4.32E-01	4.32E-01	8.00E+02	**5E-04**	**5E-04**	1.61E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	9.60E-01	Y	9.21E-01	9.21E-01	3.00E+01	**3E-02**	**3E-02**	3.42E-01	7.80E-06		**3E-06**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	1.05E-01	1.05E-01	1.00E+00	**1E-01**	**1E-01**	3.92E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	3.70E-01	N	3.55E-01	3.55E-01	5.00E+00	**7E-02**	**7E-02**	1.32E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	4.41E-01	4.41E-01	1.00E+02	**4E-03**	**4E-03**	1.64E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	8.78E-01	Y	8.42E-01	8.42E-01	9.77E+01	**9E-03**	**9E-03**	3.13E-01	2.30E-05		**7E-06**
ETHYL ACETATE	141-78-6	3.13E+00	Y	3.00E+00	3.00E+00	7.00E+01	**4E-02**	**4E-02**	1.12E+00	-		---
ETHYLBENZENE	100-41-4	3.30E+00	Y	3.16E+00	3.16E+00	1.00E+03	**3E-03**	**3E-03**	1.18E+00	2.50E-06		**3E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.95E+00	N	1.87E+00	1.87E+00	NA	---	---	6.95E-01	2.20E-05		**2E-05**
ISOPROPYL ALCOHOL	67-63-0	5.40E+00	Y	5.18E+00	5.18E+00	2.00E+02	**3E-02**	**3E-02**	1.92E+00	-		---
M,P-XYLENE	108-38-3	2.30E+00	Y	2.21E+00	2.21E+00	1.00E+02	**2E-02**	**2E-02**	8.19E-01	-		---
METHYLENE CHLORIDE	75-09-2	8.33E-01	Y	7.99E-01	7.99E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**8E-09**
NAPHTHALENE	91-20-3	3.60E-02	Y	3.45E-02	3.45E-02	3.00E+00	**1E-02**	**1E-02**	1.28E-02	3.40E-05		**4E-07**
O-XYLENE	95-47-6	8.25E-01	Y	7.91E-01	7.91E-01	1.00E+02	**8E-03**	**8E-03**	2.94E-01	-		---
TETRACHLOROETHENE	127-18-4	2.41E+01	Y	2.31E+01	2.31E+01	4.00E+01	**6E-01**	**6E-01**	8.58E+00	2.60E-07		**2E-06**
TRICHLOROETHENE	79-01-6	4.70E-01	Y	4.51E-01	4.51E-01	2.00E+00	**2E-01**	**2E-01**	M	4.10E-06	M	**1E-06**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0053H**	**Total Inhalation**	**4E+00**	**4E+00**	**2E-04**
		Based on NDs only	**3E+00**	**3E+00**	**2E-04**
		Based on Detects only	**1E+00**	**1E+00**	**2E-05**
		Site-related only	**8E-01**	**8E-01**	**4E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0053H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.33E-01	2.28E-01	1.37E-01	3.42E-01	1.14E-01	1.0E-08		2E-09	1E-09	3E-09	1E-09	**8E-09**
TRICHLOROETHENE	79-01-6	4.70E-01	1.29E-01	7.73E-02	1.93E-01	6.44E-02	1.0E-06	kidney	1E-07	8E-08	2E-07	6E-08	**5E-07**
TRICHLOROETHENE	79-01-6	4.70E-01	3.86E-02		1.29E-01		3.1E-06	NHL+liver	1E-07		4E-07		**5E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0054H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	2.14E+01	Y	2.05E+01	2.05E+01	4.00E+01	**5E-01**	**5E-01**	7.62E+00	2.60E-07		**2E-06**
TRICHLOROETHENE	79-01-6	9.30E+00	Y	8.92E+00	8.92E+00	2.00E+00	**4E+00**	**4E+00**	M	4.10E-06	M	**2E-05**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0054H**	**Total Inhalation**	**5E+00**	**5E+00**	**2E-05**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**5E+00**	**5E+00**	**2E-05**
		Site-related only	**5E+00**	**5E+00**	**2E-05**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0054H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.30E+00	2.55E+00	1.53E+00	3.82E+00	1.27E+00	1.0E-06	kidney	3E-06	2E-06	4E-06	1E-06	**9E-06**
TRICHLOROETHENE	79-01-6	9.30E+00	7.64E-01		2.55E+00		3.1E-06	NHL+liver	2E-06		8E-06		**1E-05**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0055H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.50E+00	Y	1.44E+00	1.44E+00	4.00E+01	**4E-02**	**4E-02**	5.34E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0055H**	**Total Inhalation**	**2E-01**	**2E-01**	**7E-07**
		Based on NDs only	**1E-01**	**1E-01**	**5E-07**
		Based on Detects only	**4E-02**	**4E-02**	**1E-07**
		Site-related only	**2E-01**	**2E-01**	**7E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0055H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0056H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	9.59E-01	9.59E-01		TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	6.90E+00	Y	6.62E+00	6.62E+00	4.00E+01	**2E-01**	**2E-01**	2.46E+00	2.60E-07		**6E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0056H**	**Total Inhalation**	**3E-01**	**3E-01**	**1E-06**
		Based on NDs only	**1E-01**	**1E-01**	**5E-07**
		Based on Detects only	**2E-01**	**2E-01**	**6E-07**
		Site-related only	**3E-01**	**3E-01**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0056H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0057H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	9.59E-01	9.59E-01		TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	3.36E-01	3.36E-01	4.00E+01	**8E-03**	**8E-03**	1.25E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0057H**	**Total Inhalation**	**1E-01**	**1E-01**	**6E-07**
		Based on NDs only	**1E-01**	**1E-01**	**6E-07**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**1E-01**	**1E-01**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0057H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0058H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	3.36E-01	3.36E-01	4.00E+01	**8E-03**	**8E-03**	1.25E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0058H**	**Total Inhalation**	**1E-01**	**1E-01**	**6E-07**
		Based on NDs only	**1E-01**	**1E-01**	**6E-07**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**1E-01**	**1E-01**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0058H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0059H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	7.00E-02	N	6.71E-02	6.71E-02	NA	---	---	2.49E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	3.60E-01	Y	3.45E-01	3.45E-01	2.00E+00	**2E-01**	**2E-01**	1.28E-01	3.00E-05		**4E-06**
1,4-DIOXANE	123-91-1	4.70E+00	Y	4.51E+00	4.51E+00	3.00E+01	**2E-01**	**2E-01**	1.67E+00	5.00E-06		**8E-06**
1,1,2-TRICHLOROETHANE	79-00-5	4.95E-02	N	4.75E-02	4.75E-02	2.00E-01	**2E-01**	**2E-01**	1.76E-02	1.60E-05		**3E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	4.00E+00	Y	3.84E+00	3.84E+00	2.00E+00	**2E+00**	**2E+00**	1.42E+00	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	6.10E-01	Y	5.85E-01	5.85E-01	6.00E+01	**1E-02**	**1E-02**	2.17E-01	-		---
1,2-DIBROMOETHANE	106-93-4	3.60E-02	N	3.45E-02	3.45E-02	9.00E+00	**4E-03**	**4E-03**	1.28E-02	6.00E-04		**8E-06**
1,2-DICHLOROETHANE	107-06-2	8.60E-02	Y	8.25E-02	8.25E-02	7.00E+00	**1E-02**	**1E-02**	3.06E-02	2.60E-05		**8E-07**
1,2-DICHLOROPROPANE	78-87-5	1.60E+00	Y	1.53E+00	1.53E+00	4.00E+00	**4E-01**	**4E-01**	5.70E-01	3.70E-06		**2E-06**
1,3,5-Trimethylbenzene	108-67-8	1.45E-01	N	1.39E-01	1.39E-01	6.00E+01	**2E-03**	**2E-03**	5.16E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	1.80E-01	Y	1.73E-01	1.73E-01	8.00E+02	**2E-04**	**2E-04**	6.41E-02	1.10E-05		**7E-07**
BENZENE	71-43-2	1.90E+00	Y	1.82E+00	1.82E+00	3.00E+01	**6E-02**	**6E-02**	6.77E-01	7.80E-06		**5E-06**
BENZYL CHLORIDE	100-44-7	1.50E-01	N	1.44E-01	1.44E-01	1.00E+00	**1E-01**	**1E-01**	5.34E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	2.30E-01	Y	2.21E-01	2.21E-01	NA	---	---	8.19E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	5.00E-01	N	4.79E-01	4.79E-01	5.00E+00	**1E-01**	**1E-01**	1.78E-01	-		---
CARBON TETRACHLORIDE	56-23-5	1.50E+00	Y	1.44E+00	1.44E+00	1.00E+02	**1E-02**	**1E-02**	5.34E-01	6.00E-06		**3E-06**
CHLOROFORM	67-66-3	1.70E+00	Y	1.63E+00	1.63E+00	9.77E+01	**2E-02**	**2E-02**	6.05E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	3.10E+00	Y	2.97E+00	2.97E+00	7.00E+01	**4E-02**	**4E-02**	1.10E+00	-		---
ETHYLBENZENE	100-41-4	7.40E-01	Y	7.10E-01	7.10E-01	1.00E+03	**7E-04**	**7E-04**	2.64E-01	2.50E-06		**7E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.40E+00	Y	4.22E+00	4.22E+00	NA	---	---	1.57E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL	67-63-0	8.00E+01	Y	7.67E+01	7.67E+01	2.00E+02	**4E-01**	**4E-01**	2.85E+01	-		---
M,P-XYLENE	108-38-3	3.00E+00	Y	2.88E+00	2.88E+00	1.00E+02	**3E-02**	**3E-02**	1.07E+00	-		---
METHYLENE CHLORIDE	75-09-2	9.10E-01	Y	8.73E-01	8.73E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**9E-09**
NAPHTHALENE	91-20-3	1.00E-01	Y	9.59E-02	9.59E-02	3.00E+00	**3E-02**	**3E-02**	3.56E-02	3.40E-05		**1E-06**
O-XYLENE	95-47-6	1.30E+00	Y	1.25E+00	1.25E+00	1.00E+02	**1E-02**	**1E-02**	4.63E-01	-		---
TETRACHLOROETHENE	127-18-4	2.20E+02	Y	2.11E+02	2.11E+02	4.00E+01	**5E+00**	**5E+00**	7.85E+01	2.60E-07		**2E-05**
TRICHLOROETHENE	79-01-6	1.24E+01	Y	1.18E+01	1.18E+01	2.00E+00	**6E+00**	**6E+00**	M	4.10E-06	M	**3E-05**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		---
VINYL CHLORIDE	75-01-4	2.90E-02	N	2.78E-02	2.78E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0059H**	**Total Inhalation**	**1E+01**	**1E+01**	**1E-04**
		Based on NDs only	**5E-01**	**5E-01**	**1E-05**
		Based on Detects only	**1E+01**	**1E+01**	**1E-04**
		Site-related only	**1E+01**	**1E+01**	**5E-05**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0059H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.10E-01	2.49E-01	1.50E-01	3.74E-01	1.25E-01	1.0E-08		2E-09	1E-09	4E-09	1E-09	**9E-09**
TRICHLOROETHENE	79-01-6	1.24E+01	3.38E+00	2.03E+00	5.08E+00	1.69E+00	1.0E-06	kidney	3E-06	2E-06	5E-06	2E-06	**1E-05**
TRICHLOROETHENE	79-01-6	1.24E+01	1.02E+00		3.38E+00		3.1E-06	NHL+liver	3E-06		1E-05		**1E-05**
VINYL CHLORIDE	75-01-4	2.90E-02	7.95E-03	4.77E-03	1.19E-02	3.97E-03	4.4E-06		3E-08	2E-08	5E-08	2E-08	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0060H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	3.36E-01	3.36E-01	4.00E+01	**8E-03**	**8E-03**	1.25E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0060H**	**Total Inhalation**	**1E-01**	**1E-01**	**6E-07**
		Based on NDs only	**1E-01**	**1E-01**	**6E-07**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**1E-01**	**1E-01**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0060H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0061H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	3.36E-01	3.36E-01	4.00E+01	**8E-03**	**8E-03**	1.25E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0061H**	**Total Inhalation**	**1E-01**	**1E-01**	**6E-07**
		Based on NDs only	**1E-01**	**1E-01**	**6E-07**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**1E-01**	**1E-01**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0061H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0062H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	1.01E-02	1.01E-02	NA	---	---	3.74E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	4.95E-02	N	4.75E-02	4.75E-02	2.00E+00	**2E-02**	**2E-02**	1.76E-02	3.00E-05		**5E-07**
1,4-DIOXANE	123-91-1	7.00E-02	N	6.71E-02	6.71E-02	3.00E+01	**2E-03**	**2E-03**	2.49E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	6.71E-03	6.71E-03	2.00E-01	**3E-02**	**3E-02**	2.49E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.85E-01	N	4.65E-01	4.65E-01	2.00E+00	**2E-01**	**2E-01**	1.73E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.40E-01	Y	2.30E-01	2.30E-01	6.00E+01	**4E-03**	**4E-03**	8.55E-02	-		---
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	3.16E-02	3.16E-02	9.00E+00	**4E-03**	**4E-03**	1.18E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	1.70E-01	Y	1.63E-01	1.63E-01	7.00E+00	**2E-02**	**2E-02**	6.05E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	8.63E-02	8.63E-02	4.00E+00	**2E-02**	**2E-02**	3.21E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	5.75E-02	5.75E-02	6.00E+01	**1E-03**	**1E-03**	2.14E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	4.79E-02	4.79E-02	8.00E+02	**6E-05**	**6E-05**	1.78E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	1.00E+00	Y	9.59E-01	9.59E-01	3.00E+01	**3E-02**	**3E-02**	3.56E-01	7.80E-06		**3E-06**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	8.15E-02	8.15E-02	1.00E+00	**8E-02**	**8E-02**	3.03E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	1.20E-01	1.20E-01	NA	---	---	4.45E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	6.50E-01	N	6.23E-01	6.23E-01	5.00E+00	**1E-01**	**1E-01**	2.32E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	3.84E-01	3.84E-01	1.00E+02	**4E-03**	**4E-03**	1.42E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	3.40E-01	Y	3.26E-01	3.26E-01	9.77E+01	**3E-03**	**3E-03**	1.21E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	3.00E-01	Y	2.88E-01	2.88E-01	1.00E+03	**3E-04**	**3E-04**	1.07E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	6.23E-01	6.23E-01	NA	---	---	2.32E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL	67-63-0	1.80E+01	Y	1.73E+01	1.73E+01	2.00E+02	**9E-02**	**9E-02**	6.41E+00	-		---
M,P-XYLENE	108-38-3	1.10E+00	Y	1.05E+00	1.05E+00	1.00E+02	**1E-02**	**1E-02**	3.92E-01	-		---
METHYLENE CHLORIDE	75-09-2	2.65E-01	N	2.54E-01	2.54E-01	6.00E+02	**4E-04**	**4E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.60E-01	Y	3.45E-01	3.45E-01	1.00E+02	**3E-03**	**3E-03**	1.28E-01	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	Y	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.00E-03	N	7.67E-03	7.67E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0062H**	**Total Inhalation**	**8E-01**	**8E-01**	**3E-05**
		Based on NDs only	**6E-01**	**6E-01**	**2E-05**
		Based on Detects only	**2E-01**	**2E-01**	**8E-06**
		Site-related only	**1E-01**	**1E-01**	**7E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0062H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.65E-01	7.26E-02	4.36E-02	1.09E-01	3.63E-02	1.0E-08		7E-10	4E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	8.00E-03	2.19E-03	1.32E-03	3.29E-03	1.10E-03	4.4E-06		1E-08	6E-09	1E-08	5E-09	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0063H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	4.00E+00	Y	3.84E+00	3.84E+00	4.00E+01	**1E-01**	**1E-01**	1.42E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0063H**	**Total Inhalation**	**2E-01**	**2E-01**	**9E-07**
		Based on NDs only	**1E-01**	**1E-01**	**5E-07**
		Based on Detects only	**1E-01**	**1E-01**	**4E-07**
		Site-related only	**2E-01**	**2E-01**	**9E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0063H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0064H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	5.10E-01	Y	4.89E-01	4.89E-01	3.00E+01	**2E-02**	**2E-02**	1.82E-01	5.00E-06		**9E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E-01	Y	1.15E-01	1.15E-01	6.00E+01	**2E-03**	**2E-03**	4.27E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	7.50E-02	Y	7.19E-02	7.19E-02	7.00E+00	**1E-02**	**1E-02**	2.67E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	8.64E-01	8.64E-01	8.00E+02	**1E-03**	**1E-03**	3.21E-01	1.10E-05		**4E-06**
BENZENE	71-43-2	6.07E-01	Y	5.82E-01	5.82E-01	3.00E+01	**2E-02**	**2E-02**	2.16E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	5.50E-01	N	5.27E-01	5.27E-01	5.00E+00	**1E-01**	**1E-01**	1.96E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	3.84E-01	3.84E-01	1.00E+02	**4E-03**	**4E-03**	1.42E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	7.60E-01	Y	7.29E-01	7.29E-01	9.77E+01	**7E-03**	**7E-03**	2.71E-01	2.30E-05		**6E-06**
ETHYL ACETATE	141-78-6	2.90E+00	Y	2.78E+00	2.78E+00	7.00E+01	**4E-02**	**4E-02**	1.03E+00	-		---
ETHYLBENZENE	100-41-4	1.70E+00	Y	1.63E+00	1.63E+00	1.00E+03	**2E-03**	**2E-03**	6.05E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL	67-63-0	1.00E+01	Y	9.59E+00	9.59E+00	2.00E+02	**5E-02**	**5E-02**	3.56E+00	-		---
M,P-XYLENE	108-38-3	5.65E+00	Y	5.42E+00	5.42E+00	1.00E+02	**5E-02**	**5E-02**	2.01E+00	-		---
METHYLENE CHLORIDE	75-09-2	1.10E+00	Y	1.05E+00	1.05E+00	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**1E-08**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.52E+00	Y	1.46E+00	1.46E+00	1.00E+02	**1E-02**	**1E-02**	5.41E-01	-		---
TETRACHLOROETHENE	127-18-4	1.30E+01	Y	1.25E+01	1.25E+01	4.00E+01	**3E-01**	**3E-01**	4.63E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	1.50E-01	Y	1.44E-01	1.44E-01	2.00E+00	**7E-02**	**7E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	3.37E-01	3.37E-01	2.00E+02	**2E-03**	**2E-03**	1.25E-01	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0064H**	**Total Inhalation**	**5E+00**	**5E+00**	**2E-04**
		Based on NDs only	**4E+00**	**4E+00**	**2E-04**
		Based on Detects only	**6E-01**	**6E-01**	**1E-05**
		Site-related only	**4E-01**	**4E-01**	**3E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0064H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.10E+00	3.01E-01	1.81E-01	4.52E-01	1.51E-01	1.0E-08		3E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.50E-01	4.11E-02	2.47E-02	6.16E-02	2.05E-02	1.0E-06	kidney	4E-08	2E-08	6E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.50E-01	1.23E-02		4.11E-02		3.1E-06	NHL+liver	4E-08		1E-07		**2E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0065H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.50E-02	N	5.27E-02	5.27E-02	NA	---	---	1.96E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	6.00E-02	N	5.75E-02	5.75E-02	2.00E+00	**3E-02**	**3E-02**	2.14E-02	3.00E-05		**6E-07**
1,4-DIOXANE	123-91-1	2.35E-01	N	2.25E-01	2.25E-01	3.00E+01	**8E-03**	**8E-03**	8.37E-02	5.00E-06		**4E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.05E-02	N	3.88E-02	3.88E-02	2.00E-01	**2E-01**	**2E-01**	1.44E-02	1.60E-05		**2E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.65E+00	N	1.58E+00	1.58E+00	2.00E+00	**8E-01**	**8E-01**	5.88E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.50E-01	Y	4.32E-01	4.32E-01	6.00E+01	**7E-03**	**7E-03**	1.60E-01	-		---
1,2-DIBROMOETHANE	106-93-4	2.95E-02	N	2.83E-02	2.83E-02	9.00E+00	**3E-03**	**3E-03**	1.05E-02	6.00E-04		**6E-06**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	7.38E-02	7.38E-02	7.00E+00	**1E-02**	**1E-02**	2.74E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	1.35E-01	N	1.29E-01	1.29E-01	4.00E+00	**3E-02**	**3E-02**	4.81E-02	3.70E-06		**2E-07**
1,3,5-Trimethylbenzene	108-67-8	1.20E-01	N	1.15E-01	1.15E-01	6.00E+01	**2E-03**	**2E-03**	4.27E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	N	8.15E-02	8.15E-02	8.00E+02	**1E-04**	**1E-04**	3.03E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	8.60E-01	Y	8.25E-01	8.25E-01	3.00E+01	**3E-02**	**3E-02**	3.06E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	1.25E-01	N	1.20E-01	1.20E-01	1.00E+00	**1E-01**	**1E-01**	4.45E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	2.95E-01	N	2.83E-01	2.83E-01	NA	---	---	1.05E-01	3.70E-05		**4E-06**
BROMOMETHANE	74-83-9	4.15E-01	N	3.98E-01	3.98E-01	5.00E+00	**8E-02**	**8E-02**	1.48E-01	-		---
CARBON TETRACHLORIDE	56-23-5	5.40E-01	Y	5.18E-01	5.18E-01	1.00E+02	**5E-03**	**5E-03**	1.92E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	6.70E-01	Y	6.42E-01	6.42E-01	9.77E+01	**7E-03**	**7E-03**	2.39E-01	2.30E-05		**5E-06**
ETHYL ACETATE	141-78-6	2.00E+00	Y	1.92E+00	1.92E+00	7.00E+01	**3E-02**	**3E-02**	7.12E-01	-		---
ETHYLBENZENE	100-41-4	3.60E-01	Y	3.45E-01	3.45E-01	1.00E+03	**3E-04**	**3E-04**	1.28E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	2.20E+00	N	2.11E+00	2.11E+00	NA	---	---	7.84E-01	2.20E-05		**2E-05**
ISOPROPYL ALCOHOL	67-63-0	1.00E+01	Y	9.59E+00	9.59E+00	2.00E+02	**5E-02**	**5E-02**	3.56E+00	-		---
M,P-XYLENE	108-38-3	1.40E+00	Y	1.34E+00	1.34E+00	1.00E+02	**1E-02**	**1E-02**	4.99E-01	-		---
METHYLENE CHLORIDE	75-09-2	6.20E-01	Y	5.95E-01	5.95E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**6E-09**
NAPHTHALENE	91-20-3	4.50E-02	Y	4.32E-02	4.32E-02	3.00E+00	**1E-02**	**1E-02**	1.60E-02	3.40E-05		**5E-07**
O-XYLENE	95-47-6	4.60E-01	Y	4.41E-01	4.41E-01	1.00E+02	**4E-03**	**4E-03**	1.64E-01	-		---
TETRACHLOROETHENE	127-18-4	1.60E-01	Y	1.53E-01	1.53E-01	4.00E+01	**4E-03**	**4E-03**	5.70E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	9.00E-02	N	8.63E-02	8.63E-02	2.00E+00	**4E-02**	**4E-02**	M	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		---
VINYL CHLORIDE	75-01-4	2.40E-02	N	2.30E-02	2.30E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0065H**	**Total Inhalation**	**1E+00**	**1E+00**	**4E-05**
		Based on NDs only	**1E+00**	**1E+00**	**3E-05**
		Based on Detects only	**2E-01**	**2E-01**	**1E-05**
		Site-related only	**5E-02**	**5E-02**	**7E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0065H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.20E-01	1.70E-01	1.02E-01	2.55E-01	8.49E-02	1.0E-08		2E-09	1E-09	3E-09	8E-10	**6E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	2.47E-02	1.48E-02	3.70E-02	1.23E-02	1.0E-06	kidney	2E-08	1E-08	4E-08	1E-08	**9E-08**
TRICHLOROETHENE	79-01-6	9.00E-02	7.40E-03		2.47E-02		3.1E-06	NHL+liver	2E-08		8E-08		**1E-07**
VINYL CHLORIDE	75-01-4	2.40E-02	6.58E-03	3.95E-03	9.86E-03	3.29E-03	4.4E-06		3E-08	2E-08	4E-08	1E-08	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0066H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.25E-02	N	2.16E-02	2.16E-02	NA	---	---	8.01E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	1.00E-01	N	9.59E-02	9.59E-02	2.00E+00	**5E-02**	**5E-02**	3.56E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	4.30E-01	Y	4.12E-01	4.12E-01	3.00E+01	**1E-02**	**1E-02**	1.53E-01	5.00E-06		**8E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.10E-02	N	2.01E-02	2.01E-02	2.00E-01	**1E-01**	**1E-01**	7.48E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	6.71E-01	6.71E-01	2.00E+00	**3E-01**	**3E-01**	2.49E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.30E-01	Y	4.12E-01	4.12E-01	6.00E+01	**7E-03**	**7E-03**	1.53E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	7.19E-02	7.19E-02	9.00E+00	**8E-03**	**8E-03**	2.67E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	3.50E-01	Y	3.36E-01	3.36E-01	7.00E+00	**5E-02**	**5E-02**	1.25E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	1.01E-01	1.01E-01	4.00E+00	**3E-02**	**3E-02**	3.74E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	1.25E-01	1.25E-01	6.00E+01	**2E-03**	**2E-03**	4.63E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	N	8.15E-02	8.15E-02	8.00E+02	**1E-04**	**1E-04**	3.03E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	9.90E-01	Y	9.49E-01	9.49E-01	3.00E+01	**3E-02**	**3E-02**	3.53E-01	7.80E-06		**3E-06**
BENZYL CHLORIDE	100-44-7	2.50E-01	N	2.40E-01	2.40E-01	1.00E+00	**2E-01**	**2E-01**	8.90E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	2.55E-01	N	2.45E-01	2.45E-01	NA	---	---	9.08E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	8.50E-01	N	8.15E-01	8.15E-01	5.00E+00	**2E-01**	**2E-01**	3.03E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	4.41E-01	4.41E-01	1.00E+02	**4E-03**	**4E-03**	1.64E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	6.30E-01	Y	6.04E-01	6.04E-01	9.77E+01	**6E-03**	**6E-03**	2.24E-01	2.30E-05		**5E-06**
ETHYL ACETATE	141-78-6	6.70E+00	Y	6.42E+00	6.42E+00	7.00E+01	**9E-02**	**9E-02**	2.39E+00	-		**---**
ETHYLBENZENE	100-41-4	5.10E-01	Y	4.89E-01	4.89E-01	1.00E+03	**5E-04**	**5E-04**	1.82E-01	2.50E-06		**5E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	7.67E-01	7.67E-01	NA	---	---	2.85E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	1.10E+01	Y	1.05E+01	1.05E+01	2.00E+02	**5E-02**	**5E-02**	3.92E+00	-		**---**
M,P-XYLENE	108-38-3	1.50E+00	Y	1.44E+00	1.44E+00	1.00E+02	**1E-02**	**1E-02**	5.34E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.35E-01	N	3.21E-01	3.21E-01	6.00E+02	**5E-04**	**5E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	2.55E-02	N	2.45E-02	2.45E-02	3.00E+00	**8E-03**	**8E-03**	9.08E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	3.70E-01	Y	3.55E-01	3.55E-01	1.00E+02	**4E-03**	**4E-03**	1.32E-01	-		**---**
TETRACHLOROETHENE	127-18-4	9.40E-02	Y	9.01E-02	9.01E-02	4.00E+01	**2E-03**	**2E-03**	3.35E-02	2.60E-07		**9E-09**
TRICHLOROETHENE	79-01-6	1.90E-01	Y	1.82E-01	1.82E-01	2.00E+00	**9E-02**	**9E-02**	M	4.10E-06	M	**4E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	7.00E-03	N	6.71E-03	6.71E-03	8.00E+01	**8E-05**	**8E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0066H**	**Total Inhalation**	**1E+00**	**1E+00**	**5E-05**
		Based on NDs only	**9E-01**	**9E-01**	**3E-05**
		Based on Detects only	**4E-01**	**4E-01**	**1E-05**
		Site-related only	**1E-01**	**1E-01**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0066H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.35E-01	9.18E-02	5.51E-02	1.38E-01	4.59E-02	1.0E-08		9E-10	6E-10	1E-09	5E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.90E-01	5.21E-02	3.12E-02	7.81E-02	2.60E-02	1.0E-06	kidney	5E-08	3E-08	8E-08	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	1.90E-01	1.56E-02		5.21E-02		3.1E-06	NHL+liver	5E-08		2E-07		**2E-07**
VINYL CHLORIDE	75-01-4	7.00E-03	1.92E-03	1.15E-03	2.88E-03	9.59E-04	4.4E-06		8E-09	5E-09	1E-08	4E-09	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0069H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	3.00E-02	N	2.88E-02	2.88E-02	NA	---	---	1.07E-02	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	1.35E-01	N	1.29E-01	1.29E-01	2.00E+00	**6E-02**	**6E-02**	4.81E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	2.90E-01	Y	2.78E-01	2.78E-01	3.00E+01	**9E-03**	**9E-03**	1.03E-01	5.00E-06		**5E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.80E-02	N	2.68E-02	2.68E-02	2.00E-01	**1E-01**	**1E-01**	9.97E-03	1.60E-05		**2E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	9.00E-01	N	8.63E-01	8.63E-01	2.00E+00	**4E-01**	**4E-01**	3.21E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	8.30E-01	Y	7.96E-01	7.96E-01	6.00E+01	**1E-02**	**1E-02**	2.96E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	1.00E-01	N	9.59E-02	9.59E-02	9.00E+00	**1E-02**	**1E-02**	3.56E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.40E+00	Y	1.34E+00	1.34E+00	7.00E+00	**2E-01**	**2E-01**	4.99E-01	2.60E-05		**1E-05**
1,2-DICHLOROPROPANE	78-87-5	1.40E-01	N	1.34E-01	1.34E-01	4.00E+00	**3E-02**	**3E-02**	4.99E-02	3.70E-06		**2E-07**
1,3,5-Trimethylbenzene	108-67-8	1.70E-01	N	1.63E-01	1.63E-01	6.00E+01	**3E-03**	**3E-03**	6.05E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	Y	8.15E-02	8.15E-02	8.00E+02	**1E-04**	**1E-04**	3.03E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	8.40E-01	Y	8.05E-01	8.05E-01	3.00E+01	**3E-02**	**3E-02**	2.99E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	3.40E-01	N	3.26E-01	3.26E-01	1.00E+00	**3E-01**	**3E-01**	1.21E-01	4.90E-05		**6E-06**
BROMODICHLOROMETHANE	75-27-4	3.45E-01	N	3.31E-01	3.31E-01	NA	---	---	1.23E-01	3.70E-05		**5E-06**
BROMOMETHANE	74-83-9	1.15E+00	N	1.10E+00	1.10E+00	5.00E+00	**2E-01**	**2E-01**	4.10E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	4.22E-01	4.22E-01	1.00E+02	**4E-03**	**4E-03**	1.57E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	6.00E-01	Y	5.75E-01	5.75E-01	9.77E+01	**6E-03**	**6E-03**	2.14E-01	2.30E-05		**5E-06**
ETHYL ACETATE	141-78-6	1.10E+00	Y	1.05E+00	1.05E+00	7.00E+01	**2E-02**	**2E-02**	3.92E-01	-		**---**
ETHYLBENZENE	100-41-4	2.30E-01	Y	2.21E-01	2.21E-01	1.00E+03	**2E-04**	**2E-04**	8.19E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.10E+00	N	1.05E+00	1.05E+00	NA	---	---	3.92E-01	2.20E-05		**9E-06**
ISOPROPYL ALCOHOL	67-63-0	4.60E+00	Y	4.41E+00	4.41E+00	2.00E+02	**2E-02**	**2E-02**	1.64E+00	-		**---**
M,P-XYLENE	108-38-3	8.70E-01	Y	8.34E-01	8.34E-01	1.00E+02	**8E-03**	**8E-03**	3.10E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	7.90E-01	Y	7.58E-01	7.58E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**8E-09**
NAPHTHALENE	91-20-3	2.70E-02	N	2.59E-02	2.59E-02	3.00E+00	**9E-03**	**9E-03**	9.62E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	3.60E-01	Y	3.45E-01	3.45E-01	1.00E+02	**3E-03**	**3E-03**	1.28E-01	-		**---**
TETRACHLOROETHENE	127-18-4	3.40E-01	Y	3.26E-01	3.26E-01	4.00E+01	**8E-03**	**8E-03**	1.21E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	1.30E-01	Y	1.25E-01	1.25E-01	2.00E+00	**6E-02**	**6E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	9.00E-03	N	8.63E-03	8.63E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**4E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0069H**	**Total Inhalation**	**2E+00**	**2E+00**	**7E-05**
		Based on NDs only	**1E+00**	**1E+00**	**4E-05**
		Based on Detects only	**4E-01**	**4E-01**	**2E-05**
		Site-related only	**8E-02**	**8E-02**	**9E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0069H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.90E-01	2.16E-01	1.30E-01	3.25E-01	1.08E-01	1.0E-08		2E-09	1E-09	3E-09	1E-09	**8E-09**
TRICHLOROETHENE	79-01-6	1.30E-01	3.56E-02	2.14E-02	5.34E-02	1.78E-02	1.0E-06	kidney	4E-08	2E-08	5E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.30E-01	1.07E-02		3.56E-02		3.1E-06	NHL+liver	3E-08		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	9.00E-03	2.47E-03	1.48E-03	3.70E-03	1.23E-03	4.4E-06		1E-08	7E-09	2E-08	5E-09	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0071H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	2.06E-02	2.06E-02	NA	---	---	7.66E-03	5.80E-05		**4E-07**
1,3-BUTADIENE	106-99-0	9.50E-02	N	9.11E-02	9.11E-02	2.00E+00	**5E-02**	**5E-02**	3.38E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	6.00E-02	N	5.75E-02	5.75E-02	3.00E+01	**2E-03**	**2E-03**	2.14E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	1.92E-02	1.92E-02	2.00E-01	**1E-01**	**1E-01**	7.12E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	6.23E-01	6.23E-01	2.00E+00	**3E-01**	**3E-01**	2.32E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E-01	N	1.34E-01	1.34E-01	6.00E+01	**2E-03**	**2E-03**	4.99E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	6.71E-02	6.71E-02	9.00E+00	**7E-03**	**7E-03**	2.49E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	8.00E-01	Y	7.67E-01	7.67E-01	7.00E+00	**1E-01**	**1E-01**	2.85E-01	2.60E-05		**7E-06**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	9.59E-02	9.59E-02	4.00E+00	**2E-02**	**2E-02**	3.56E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.20E-01	N	1.15E-01	1.15E-01	6.00E+01	**2E-03**	**2E-03**	4.27E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	7.67E-02	7.67E-02	8.00E+02	**1E-04**	**1E-04**	2.85E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	6.50E-01	Y	6.23E-01	6.23E-01	3.00E+01	**2E-02**	**2E-02**	2.32E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	2.40E-01	N	2.30E-01	2.30E-01	1.00E+00	**2E-01**	**2E-01**	8.55E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	2.45E-01	N	2.35E-01	2.35E-01	NA	---	---	8.73E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	7.67E-01	7.67E-01	5.00E+00	**2E-01**	**2E-01**	2.85E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	4.41E-01	4.41E-01	1.00E+02	**4E-03**	**4E-03**	1.64E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.60E+00	Y	1.53E+00	1.53E+00	9.77E+01	**2E-02**	**2E-02**	5.70E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	2.60E+01	Y	2.49E+01	2.49E+01	7.00E+01	**4E-01**	**4E-01**	9.26E+00	-		**---**
ETHYLBENZENE	100-41-4	3.00E-01	Y	2.88E-01	2.88E-01	1.00E+03	**3E-04**	**3E-04**	1.07E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	7.67E-01	7.67E-01	NA	---	---	2.85E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	4.30E+00	Y	4.12E+00	4.12E+00	2.00E+02	**2E-02**	**2E-02**	1.53E+00	-		**---**
M,P-XYLENE	108-38-3	8.50E-01	Y	8.15E-01	8.15E-01	1.00E+02	**8E-03**	**8E-03**	3.03E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.15E-01	N	3.02E-01	3.02E-01	6.00E+02	**5E-04**	**5E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	2.75E-02	N	2.64E-02	2.64E-02	3.00E+00	**9E-03**	**9E-03**	9.79E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	3.20E-01	Y	3.07E-01	3.07E-01	1.00E+02	**3E-03**	**3E-03**	1.14E-01	-		**---**
TETRACHLOROETHENE	127-18-4	3.30E-01	Y	3.16E-01	3.16E-01	4.00E+01	**8E-03**	**8E-03**	1.18E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-03	N	6.23E-03	6.23E-03	8.00E+01	**8E-05**	**8E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0071H**	**Total Inhalation**	**1E+00**	**1E+00**	**5E-05**
		Based on NDs only	**9E-01**	**9E-01**	**3E-05**
		Based on Detects only	**5E-01**	**5E-01**	**2E-05**
		Site-related only	**3E-02**	**3E-02**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0071H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.15E-01	8.63E-02	5.18E-02	1.29E-01	4.32E-02	1.0E-08		9E-10	5E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	6.50E-03	1.78E-03	1.07E-03	2.67E-03	8.90E-04	4.4E-06		8E-09	5E-09	1E-08	4E-09	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0072H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.90E-02	N	2.78E-02	2.78E-02	NA	---	---	1.03E-02	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	6.00E-02	N	5.75E-02	5.75E-02	2.00E+00	**3E-02**	**3E-02**	2.14E-02	3.00E-05		**6E-07**
1,4-DIOXANE	123-91-1	1.00E-01	N	9.59E-02	9.59E-02	3.00E+01	**3E-03**	**3E-03**	3.56E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.40E-02	N	1.34E-02	1.34E-02	2.00E-01	**7E-02**	**7E-02**	4.99E-03	1.60E-05		**8E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	5.75E-01	5.75E-01	2.00E+00	**3E-01**	**3E-01**	2.14E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	2.70E-01	Y	2.59E-01	2.59E-01	6.00E+01	**4E-03**	**4E-03**	9.62E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	5.00E-02	N	4.79E-02	4.79E-02	9.00E+00	**5E-03**	**5E-03**	1.78E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	1.05E-01	1.05E-01	7.00E+00	**2E-02**	**2E-02**	3.92E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	1.15E-01	N	1.10E-01	1.10E-01	4.00E+00	**3E-02**	**3E-02**	4.10E-02	3.70E-06		**2E-07**
1,3,5-Trimethylbenzene	108-67-8	9.50E-02	N	9.11E-02	9.11E-02	6.00E+01	**2E-03**	**2E-03**	3.38E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	5.27E-02	5.27E-02	8.00E+02	**7E-05**	**7E-05**	1.96E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	4.00E-01	Y	3.84E-01	3.84E-01	3.00E+01	**1E-02**	**1E-02**	1.42E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	1.30E-01	N	1.25E-01	1.25E-01	1.00E+00	**1E-01**	**1E-01**	4.63E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	1.25E-01	1.25E-01	NA	---	---	4.63E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	6.71E-01	6.71E-01	5.00E+00	**1E-01**	**1E-01**	2.49E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	3.64E-01	3.64E-01	1.00E+02	**4E-03**	**4E-03**	1.35E-01	6.00E-06		**8E-07**
CHLOROFORM	67-66-3	2.90E-01	Y	2.78E-01	2.78E-01	9.77E+01	**3E-03**	**3E-03**	1.03E-01	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.10E-01	Y	2.01E-01	2.01E-01	1.00E+03	**2E-04**	**2E-04**	7.48E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.90E-01	N	4.70E-01	4.70E-01	NA	**---**	**---**	1.75E-01	2.20E-05		**4E-06**
ISOPROPYL ALCOHOL	67-63-0	3.10E+01	Y	2.97E+01	2.97E+01	2.00E+02	**1E-01**	**1E-01**	1.10E+01	-		**---**
M,P-XYLENE	108-38-3	6.80E-01	Y	6.52E-01	6.52E-01	1.00E+02	**7E-03**	**7E-03**	2.42E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	7.20E-01	Y	6.90E-01	6.90E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.50E-01	Y	2.40E-01	2.40E-01	1.00E+02	**2E-03**	**2E-03**	8.90E-02	-		**---**
TETRACHLOROETHENE	127-18-4	2.40E-01	Y	2.30E-01	2.30E-01	4.00E+01	**6E-03**	**6E-03**	8.55E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	2.80E-02	Y	2.68E-02	2.68E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	4.60E-03	N	4.41E-03	4.41E-03	8.00E+01	**6E-05**	**6E-05**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0072H**	**Total Inhalation**	**9E-01**	**9E-01**	**3E-05**
		Based on NDs only	**7E-01**	**7E-01**	**2E-05**
		Based on Detects only	**2E-01**	**2E-01**	**6E-06**
		Site-related only	**2E-02**	**2E-02**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0072H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.20E-01	1.97E-01	1.18E-01	2.96E-01	9.86E-02	1.0E-08		2E-09	1E-09	3E-09	1E-09	**7E-09**
TRICHLOROETHENE	79-01-6	2.80E-02	7.67E-03	4.60E-03	1.15E-02	3.84E-03	1.0E-06	kidney	8E-09	5E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.80E-02	2.30E-03		7.67E-03		3.1E-06	NHL+liver	7E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	4.60E-03	1.26E-03	7.56E-04	1.89E-03	6.30E-04	4.4E-06		6E-09	3E-09	8E-09	3E-09	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0076H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.25E-02	N	2.16E-02	2.16E-02	NA	---	---	8.01E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	1.00E-01	N	9.59E-02	9.59E-02	2.00E+00	**5E-02**	**5E-02**	3.56E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	2.50E-01	Y	2.40E-01	2.40E-01	3.00E+01	**8E-03**	**8E-03**	8.90E-02	5.00E-06		**4E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.10E-02	N	2.01E-02	2.01E-02	2.00E-01	**1E-01**	**1E-01**	7.48E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	6.71E-01	6.71E-01	2.00E+00	**3E-01**	**3E-01**	2.49E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.70E+00	Y	1.63E+00	1.63E+00	6.00E+01	**3E-02**	**3E-02**	6.05E-01	-		---
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	7.19E-02	7.19E-02	9.00E+00	**8E-03**	**8E-03**	2.67E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.20E-01	Y	1.15E-01	1.15E-01	7.00E+00	**2E-02**	**2E-02**	4.27E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	1.01E-01	1.01E-01	4.00E+00	**3E-02**	**3E-02**	3.74E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	4.10E-01	Y	3.93E-01	3.93E-01	6.00E+01	**7E-03**	**7E-03**	1.46E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	N	8.15E-02	8.15E-02	8.00E+02	**1E-04**	**1E-04**	3.03E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	3.40E+00	Y	3.26E+00	3.26E+00	3.00E+01	**1E-01**	**1E-01**	1.21E+00	7.80E-06		**9E-06**
BENZYL CHLORIDE	100-44-7	2.50E-01	N	2.40E-01	2.40E-01	1.00E+00	**2E-01**	**2E-01**	8.90E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	2.55E-01	N	2.45E-01	2.45E-01	NA	---	---	9.08E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	8.50E-01	N	8.15E-01	8.15E-01	5.00E+00	**2E-01**	**2E-01**	3.03E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	4.41E-01	4.41E-01	1.00E+02	**4E-03**	**4E-03**	1.64E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	7.50E-01	Y	7.19E-01	7.19E-01	9.77E+01	**7E-03**	**7E-03**	2.67E-01	2.30E-05		**6E-06**
ETHYL ACETATE	141-78-6	4.90E+00	Y	4.70E+00	4.70E+00	7.00E+01	**7E-02**	**7E-02**	1.75E+00	-		---
ETHYLBENZENE	100-41-4	1.80E+00	Y	1.73E+00	1.73E+00	1.00E+03	**2E-03**	**2E-03**	6.41E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	7.67E-01	7.67E-01	NA	---	---	2.85E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	8.50E+00	Y	8.15E+00	8.15E+00	2.00E+02	**4E-02**	**4E-02**	3.03E+00	-		---
M,P-XYLENE	108-38-3	8.60E+00	Y	8.25E+00	8.25E+00	1.00E+02	**8E-02**	**8E-02**	3.06E+00	-		---
METHYLENE CHLORIDE	75-09-2	8.30E-01	Y	7.96E-01	7.96E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**8E-09**
NAPHTHALENE	91-20-3	2.90E-02	N	2.78E-02	2.78E-02	3.00E+00	**9E-03**	**9E-03**	1.03E-02	3.40E-05		**4E-07**
O-XYLENE	95-47-6	2.20E+00	Y	2.11E+00	2.11E+00	1.00E+02	**2E-02**	**2E-02**	7.84E-01	-		---
TETRACHLOROETHENE	127-18-4	4.90E-02	Y	4.70E-02	4.70E-02	4.00E+01	**1E-03**	**1E-03**	1.75E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		---
VINYL CHLORIDE	75-01-4	7.00E-03	N	6.71E-03	6.71E-03	8.00E+01	**8E-05**	**8E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0076H**	**Total Inhalation**	**1E+00**	**1E+00**	**5E-05**
		Based on NDs only	**1E+00**	**1E+00**	**3E-05**
		Based on Detects only	**4E-01**	**4E-01**	**2E-05**
		Site-related only	**3E-02**	**3E-02**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0076H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.30E-01	2.27E-01	1.36E-01	3.41E-01	1.14E-01	1.0E-08		2E-09	1E-09	3E-09	1E-09	**8E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	7.00E-03	1.92E-03	1.15E-03	2.88E-03	9.59E-04	4.4E-06		8E-09	5E-09	1E-08	4E-09	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0091H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.20E-02	N	2.11E-02	2.11E-02	NA	---	---	7.84E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	1.00E-01	N	9.59E-02	9.59E-02	2.00E+00	**5E-02**	**5E-02**	3.56E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	2.80E-01	Y	2.68E-01	2.68E-01	3.00E+01	**9E-03**	**9E-03**	9.97E-02	5.00E-06		**5E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.05E-02	N	1.97E-02	1.97E-02	2.00E-01	**1E-01**	**1E-01**	7.30E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.00E+00	N	9.59E-01	9.59E-01	2.00E+00	**5E-01**	**5E-01**	3.56E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.10E-01	Y	4.89E-01	4.89E-01	6.00E+01	**8E-03**	**8E-03**	1.82E-01	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	6.71E-02	6.71E-02	9.00E+00	**7E-03**	**7E-03**	2.49E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	4.70E-01	Y	4.51E-01	4.51E-01	7.00E+00	**6E-02**	**6E-02**	1.67E-01	2.60E-05		**4E-06**
1,2-DICHLOROPROPANE	78-87-5	1.10E-01	Y	1.05E-01	1.05E-01	4.00E+00	**3E-02**	**3E-02**	3.92E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.25E-01	N	1.20E-01	1.20E-01	6.00E+01	**2E-03**	**2E-03**	4.45E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	1.30E-01	Y	1.25E-01	1.25E-01	8.00E+02	**2E-04**	**2E-04**	4.63E-02	1.10E-05		**5E-07**
BENZENE	71-43-2	8.30E-01	Y	7.96E-01	7.96E-01	3.00E+01	**3E-02**	**3E-02**	2.96E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	2.35E-01	2.35E-01	1.00E+00	**2E-01**	**2E-01**	8.73E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	6.80E-01	Y	6.52E-01	6.52E-01	NA	---	---	2.42E-01	3.70E-05		**9E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	7.67E-01	7.67E-01	5.00E+00	**2E-01**	**2E-01**	2.85E-01	-		---
CARBON TETRACHLORIDE	56-23-5	7.70E-01	Y	7.38E-01	7.38E-01	1.00E+02	**7E-03**	**7E-03**	2.74E-01	6.00E-06		**2E-06**
CHLOROFORM	67-66-3	3.80E+00	Y	3.64E+00	3.64E+00	9.77E+01	**4E-02**	**4E-02**	1.35E+00	2.30E-05		**3E-05**
ETHYL ACETATE	141-78-6	8.20E+00	Y	7.86E+00	7.86E+00	7.00E+01	**1E-01**	**1E-01**	2.92E+00	-		---
ETHYLBENZENE	100-41-4	6.60E-01	Y	6.33E-01	6.33E-01	1.00E+03	**6E-04**	**6E-04**	2.35E-01	2.50E-06		**6E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	7.67E-01	7.67E-01	NA	---	---	2.85E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	5.60E+01	Y	5.37E+01	5.37E+01	2.00E+02	**3E-01**	**3E-01**	1.99E+01	-		---
M,P-XYLENE	108-38-3	1.90E+00	Y	1.82E+00	1.82E+00	1.00E+02	**2E-02**	**2E-02**	6.77E-01	-		---
METHYLENE CHLORIDE	75-09-2	1.10E+00	Y	1.05E+00	1.05E+00	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**1E-08**
NAPHTHALENE	91-20-3	2.75E-02	N	2.64E-02	2.64E-02	3.00E+00	**9E-03**	**9E-03**	9.79E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	7.20E-01	Y	6.90E-01	6.90E-01	1.00E+02	**7E-03**	**7E-03**	2.56E-01	-		---
TETRACHLOROETHENE	127-18-4	1.80E+01	Y	1.73E+01	1.73E+01	4.00E+01	**4E-01**	**4E-01**	6.41E+00	2.60E-07		**2E-06**
TRICHLOROETHENE	79-01-6	4.30E-01	Y	4.12E-01	4.12E-01	2.00E+00	**2E-01**	**2E-01**	M	4.10E-06	M	**9E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		---
VINYL CHLORIDE	75-01-4	6.50E-03	N	6.23E-03	6.23E-03	8.00E+01	**8E-05**	**8E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0091H**	**Total Inhalation**	**2E+00**	**2E+00**	**8E-05**
		Based on NDs only	**1E+00**	**1E+00**	**3E-05**
		Based on Detects only	**1E+00**	**1E+00**	**5E-05**
		Site-related only	**6E-01**	**6E-01**	**3E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0091H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.10E+00	3.01E-01	1.81E-01	4.52E-01	1.51E-01	1.0E-08		3E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	4.30E-01	1.18E-01	7.07E-02	1.77E-01	5.89E-02	1.0E-06	kidney	1E-07	7E-08	2E-07	6E-08	**4E-07**
TRICHLOROETHENE	79-01-6	4.30E-01	3.53E-02		1.18E-01		3.1E-06	NHL+liver	1E-07		4E-07		**5E-07**
VINYL CHLORIDE	75-01-4	6.50E-03	1.78E-03	1.07E-03	2.67E-03	8.90E-04	4.4E-06		8E-09	5E-09	1E-08	4E-09	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0098H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	2.06E-02	2.06E-02	NA	---	---	7.66E-03	5.80E-05		**4E-07**
1,3-BUTADIENE	106-99-0	1.00E-01	N	9.59E-02	9.59E-02	2.00E+00	**5E-02**	**5E-02**	3.56E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	1.80E-01	Y	1.73E-01	1.73E-01	3.00E+01	**6E-03**	**6E-03**	6.41E-02	5.00E-06		**3E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	1.92E-02	1.92E-02	2.00E-01	**1E-01**	**1E-01**	7.12E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	6.23E-01	6.23E-01	2.00E+00	**3E-01**	**3E-01**	2.32E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.30E+00	Y	1.25E+00	1.25E+00	6.00E+01	**2E-02**	**2E-02**	4.63E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	6.71E-02	6.71E-02	9.00E+00	**7E-03**	**7E-03**	2.49E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	9.10E-02	Y	8.73E-02	8.73E-02	7.00E+00	**1E-02**	**1E-02**	3.24E-02	2.60E-05		**8E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	9.59E-02	9.59E-02	4.00E+00	**2E-02**	**2E-02**	3.56E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	3.30E-01	Y	3.16E-01	3.16E-01	6.00E+01	**5E-03**	**5E-03**	1.18E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.30E+00	Y	1.25E+00	1.25E+00	8.00E+02	**2E-03**	**2E-03**	4.63E-01	1.10E-05		**5E-06**
BENZENE	71-43-2	5.30E+00	Y	5.08E+00	5.08E+00	3.00E+01	**2E-01**	**2E-01**	1.89E+00	7.80E-06		**1E-05**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	2.35E-01	2.35E-01	1.00E+00	**2E-01**	**2E-01**	8.73E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	2.45E-01	N	2.35E-01	2.35E-01	NA	---	---	8.73E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	7.67E-01	7.67E-01	5.00E+00	**2E-01**	**2E-01**	2.85E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	4.32E-01	4.32E-01	1.00E+02	**4E-03**	**4E-03**	1.60E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	4.60E-01	Y	4.41E-01	4.41E-01	9.77E+01	**5E-03**	**5E-03**	1.64E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	1.50E+00	Y	1.44E+00	1.44E+00	7.00E+01	**2E-02**	**2E-02**	5.34E-01	-		**---**
ETHYLBENZENE	100-41-4	3.00E+00	Y	2.88E+00	2.88E+00	1.00E+03	**3E-03**	**3E-03**	1.07E+00	2.50E-06		**3E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	7.67E-01	7.67E-01	NA	---	---	2.85E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	5.40E+00	Y	5.18E+00	5.18E+00	2.00E+02	**3E-02**	**3E-02**	1.92E+00	-		**---**
M,P-XYLENE	108-38-3	1.30E+01	Y	1.25E+01	1.25E+01	1.00E+02	**1E-01**	**1E-01**	4.63E+00	-		**---**
METHYLENE CHLORIDE	75-09-2	4.55E-01	N	4.36E-01	4.36E-01	6.00E+02	**7E-04**	**7E-04**	M	1.00E-08	M	**4E-09**
NAPHTHALENE	91-20-3	2.50E-02	N	2.40E-02	2.40E-02	3.00E+00	**8E-03**	**8E-03**	8.90E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	3.50E+00	Y	3.36E+00	3.36E+00	1.00E+02	**3E-02**	**3E-02**	1.25E+00	-		**---**
TETRACHLOROETHENE	127-18-4	1.20E+00	Y	1.15E+00	1.15E+00	4.00E+01	**3E-02**	**3E-02**	4.27E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	7.80E-01	Y	7.48E-01	7.48E-01	2.00E+00	**4E-01**	**4E-01**	M	4.10E-06	M	**2E-06**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-03	N	6.23E-03	6.23E-03	8.00E+01	**8E-05**	**8E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0098H**	**Total Inhalation**	**2E+00**	**2E+00**	**6E-05**
		Based on NDs only	**9E-01**	**9E-01**	**3E-05**
		Based on Detects only	**8E-01**	**8E-01**	**3E-05**
		Site-related only	**4E-01**	**4E-01**	**2E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0098H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.55E-01	1.25E-01	7.48E-02	1.87E-01	6.23E-02	1.0E-08		1E-09	7E-10	2E-09	6E-10	**4E-09**
TRICHLOROETHENE	79-01-6	7.80E-01	2.14E-01	1.28E-01	3.21E-01	1.07E-01	1.0E-06	kidney	2E-07	1E-07	3E-07	1E-07	**8E-07**
TRICHLOROETHENE	79-01-6	7.80E-01	6.41E-02		2.14E-01		3.1E-06	NHL+liver	2E-07		7E-07		**9E-07**
VINYL CHLORIDE	75-01-4	6.50E-03	1.78E-03	1.07E-03	2.67E-03	8.90E-04	4.4E-06		8E-09	5E-09	1E-08	4E-09	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0102H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.50E-02	N	1.44E-02	1.44E-02	NA	---	---	5.34E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	2.90E-02	N	2.78E-02	2.78E-02	2.00E+00	**1E-02**	**1E-02**	1.03E-02	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	4.20E-01	Y	4.03E-01	4.03E-01	3.00E+01	**1E-02**	**1E-02**	1.50E-01	5.00E-06		**7E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.50E-03	N	8.15E-03	8.15E-03	2.00E-01	**4E-02**	**4E-02**	3.03E-03	1.60E-05		**5E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.05E+00	N	1.01E+00	1.01E+00	2.00E+00	**5E-01**	**5E-01**	3.74E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.10E+00	Y	5.85E+00	5.85E+00	6.00E+01	**1E-01**	**1E-01**	2.17E+00	-		**---**
1,2-DIBROMOETHANE	106-93-4	8.50E-03	N	8.15E-03	8.15E-03	9.00E+00	**9E-04**	**9E-04**	3.03E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	9.00E-01	Y	8.63E-01	8.63E-01	7.00E+00	**1E-01**	**1E-01**	3.21E-01	2.60E-05		**8E-06**
1,2-DICHLOROPROPANE	78-87-5	4.00E-02	N	3.84E-02	3.84E-02	4.00E+00	**1E-02**	**1E-02**	1.42E-02	3.70E-06		**5E-08**
1,3,5-Trimethylbenzene	108-67-8	1.70E+00	Y	1.63E+00	1.63E+00	6.00E+01	**3E-02**	**3E-02**	6.05E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.40E-02	N	4.22E-02	4.22E-02	8.00E+02	**5E-05**	**5E-05**	1.57E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	2.50E+00	Y	2.40E+00	2.40E+00	3.00E+01	**8E-02**	**8E-02**	8.90E-01	7.80E-06		**7E-06**
BENZYL CHLORIDE	100-44-7	7.00E-02	N	6.71E-02	6.71E-02	1.00E+00	**7E-02**	**7E-02**	2.49E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	3.00E-01	Y	2.88E-01	2.88E-01	NA	---	---	1.07E-01	3.70E-05		**4E-06**
BROMOMETHANE	74-83-9	1.95E-01	N	1.87E-01	1.87E-01	5.00E+00	**4E-02**	**4E-02**	6.95E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	1.20E+00	Y	1.15E+00	1.15E+00	1.00E+02	**1E-02**	**1E-02**	4.27E-01	6.00E-06		**3E-06**
CHLOROFORM	67-66-3	1.40E+00	Y	1.34E+00	1.34E+00	9.77E+01	**1E-02**	**1E-02**	4.99E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	3.60E+00	Y	3.45E+00	3.45E+00	1.00E+03	**3E-03**	**3E-03**	1.28E+00	2.50E-06		**3E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	8.15E-01	8.15E-01	NA	---	---	3.03E-01	2.20E-05		**7E-06**
ISOPROPYL ALCOHOL	67-63-0	1.20E+02	Y	1.15E+02	1.15E+02	2.00E+02	**6E-01**	**6E-01**	4.27E+01	-		**---**
M,P-XYLENE	108-38-3	1.80E+01	Y	1.73E+01	1.73E+01	1.00E+02	**2E-01**	**2E-01**	6.41E+00	-		**---**
METHYLENE CHLORIDE	75-09-2	4.80E-01	N	4.60E-01	4.60E-01	6.00E+02	**8E-04**	**8E-04**	M	1.00E-08	M	**5E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	6.20E+00	Y	5.95E+00	5.95E+00	1.00E+02	**6E-02**	**6E-02**	2.21E+00	-		**---**
TETRACHLOROETHENE	127-18-4	4.70E-01	Y	4.51E-01	4.51E-01	4.00E+01	**1E-02**	**1E-02**	1.67E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	2.00E-02	Y	1.92E-02	1.92E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	2.75E-03	N	2.64E-03	2.64E-03	8.00E+01	**3E-05**	**3E-05**	M	4.40E-06	M	**1E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0102H**	**Total Inhalation**	**2E+00**	**2E+00**	**5E-05**
		Based on NDs only	**7E-01**	**7E-01**	**1E-05**
		Based on Detects only	**1E+00**	**1E+00**	**4E-05**
		Site-related only	**3E-02**	**3E-02**	**8E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0102H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.80E-01	1.32E-01	7.89E-02	1.97E-01	6.58E-02	1.0E-08		1E-09	8E-10	2E-09	7E-10	**5E-09**
TRICHLOROETHENE	79-01-6	2.00E-02	5.48E-03	3.29E-03	8.22E-03	2.74E-03	1.0E-06	kidney	5E-09	3E-09	8E-09	3E-09	**2E-08**
TRICHLOROETHENE	79-01-6	2.00E-02	1.64E-03		5.48E-03		3.1E-06	NHL+liver	5E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	2.75E-03	7.53E-04	4.52E-04	1.13E-03	3.77E-04	4.4E-06		3E-09	2E-09	5E-09	2E-09	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0118H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00E-01	N	9.59E-02	9.59E-02	NA	---	---	3.56E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	4.50E-01	N	4.32E-01	4.32E-01	2.00E+00	**2E-01**	**2E-01**	1.60E-01	3.00E-05		**5E-06**
1,4-DIOXANE	123-91-1	1.20E-01	Y	1.15E-01	1.15E-01	3.00E+01	**4E-03**	**4E-03**	4.27E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	9.50E-02	N	9.11E-02	9.11E-02	2.00E-01	**5E-01**	**5E-01**	3.38E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	3.05E+00	N	2.92E+00	2.92E+00	2.00E+00	**1E+00**	**1E+00**	1.09E+00	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.70E-01	Y	4.51E-01	4.51E-01	6.00E+01	**8E-03**	**8E-03**	1.67E-01	-		---
1,2-DIBROMOETHANE	106-93-4	3.30E-01	N	3.16E-01	3.16E-01	9.00E+00	**4E-02**	**4E-02**	1.18E-01	6.00E-04		**7E-05**
1,2-DICHLOROETHANE	107-06-2	7.80E-02	Y	7.48E-02	7.48E-02	7.00E+00	**1E-02**	**1E-02**	2.78E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	4.70E-01	N	4.51E-01	4.51E-01	4.00E+00	**1E-01**	**1E-01**	1.67E-01	3.70E-06		**6E-07**
1,3,5-Trimethylbenzene	108-67-8	5.50E-01	N	5.27E-01	5.27E-01	6.00E+01	**9E-03**	**9E-03**	1.96E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	3.70E-01	N	3.55E-01	3.55E-01	8.00E+02	**4E-04**	**4E-04**	1.32E-01	1.10E-05		**1E-06**
BENZENE	71-43-2	7.30E-01	Y	7.00E-01	7.00E-01	3.00E+01	**2E-02**	**2E-02**	2.60E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	1.10E+00	N	1.05E+00	1.05E+00	1.00E+00	**1E+00**	**1E+00**	3.92E-01	4.90E-05		**2E-05**
BROMODICHLOROMETHANE	75-27-4	1.15E+00	N	1.10E+00	1.10E+00	NA	---	---	4.10E-01	3.70E-05		**2E-05**
BROMOMETHANE	74-83-9	3.75E+00	N	3.60E+00	3.60E+00	5.00E+00	**7E-01**	**7E-01**	1.34E+00	-		---
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	4.32E-01	4.32E-01	1.00E+02	**4E-03**	**4E-03**	1.60E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	2.20E+00	Y	2.11E+00	2.11E+00	9.77E+01	**2E-02**	**2E-02**	7.84E-01	2.30E-05		**2E-05**
ETHYL ACETATE	141-78-6	9.00E+00	Y	8.63E+00	8.63E+00	7.00E+01	**1E-01**	**1E-01**	3.21E+00	-		---
ETHYLBENZENE	100-41-4	3.90E-01	Y	3.74E-01	3.74E-01	1.00E+03	**4E-04**	**4E-04**	1.39E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.70E+00	N	3.55E+00	3.55E+00	NA	---	---	1.32E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL	67-63-0	1.40E+01	Y	1.34E+01	1.34E+01	2.00E+02	**7E-02**	**7E-02**	4.99E+00	-		---
M,P-XYLENE	108-38-3	1.70E+00	Y	1.63E+00	1.63E+00	1.00E+02	**2E-02**	**2E-02**	6.05E-01	-		---
METHYLENE CHLORIDE	75-09-2	5.00E+02	Y	4.79E+02	4.79E+02	6.00E+02	**8E-01**	**8E-01**	M	1.00E-08	M	**5E-06**
NAPHTHALENE	91-20-3	2.75E-02	N	2.64E-02	2.64E-02	3.00E+00	**9E-03**	**9E-03**	9.79E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	5.40E-01	Y	5.18E-01	5.18E-01	1.00E+02	**5E-03**	**5E-03**	1.92E-01	-		---
TETRACHLOROETHENE	127-18-4	4.90E+00	Y	4.70E+00	4.70E+00	4.00E+01	**1E-01**	**1E-01**	1.75E+00	2.60E-07		**5E-07**
TRICHLOROETHENE	79-01-6	3.10E-02	Y	2.97E-02	2.97E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		---
VINYL CHLORIDE	75-01-4	3.00E-02	N	2.88E-02	2.88E-02	8.00E+01	**4E-04**	**4E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0118H**	**Total Inhalation**	**5E+00**	**5E+00**	**2E-04**
		Based on NDs only	**4E+00**	**4E+00**	**1E-04**
		Based on Detects only	**1E+00**	**1E+00**	**3E-05**
		Site-related only	**1E-01**	**1E-01**	**9E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0118H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.00E+02	1.37E+02	8.22E+01	2.05E+02	6.85E+01	1.0E-08		1E-06	8E-07	2E-06	7E-07	**5E-06**
TRICHLOROETHENE	79-01-6	3.10E-02	8.49E-03	5.10E-03	1.27E-02	4.25E-03	1.0E-06	kidney	8E-09	5E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	3.10E-02	2.55E-03		8.49E-03		3.1E-06	NHL+liver	8E-09		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	3.00E-02	8.22E-03	4.93E-03	1.23E-02	4.11E-03	4.4E-06		4E-08	2E-08	5E-08	2E-08	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0121H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.90E-02	N	2.78E-02	2.78E-02	NA	---	---	1.03E-02	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	9.00E-02	N	8.63E-02	8.63E-02	2.00E+00	**4E-02**	**4E-02**	3.21E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	2.00E-01	Y	1.92E-01	1.92E-01	3.00E+01	**6E-03**	**6E-03**	7.12E-02	5.00E-06		**4E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.90E-02	N	1.82E-02	1.82E-02	2.00E-01	**9E-02**	**9E-02**	6.77E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	6.71E-01	6.71E-01	2.00E+00	**3E-01**	**3E-01**	2.49E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.35E-01	N	1.29E-01	1.29E-01	6.00E+01	**2E-03**	**2E-03**	4.81E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	6.71E-02	6.71E-02	9.00E+00	**7E-03**	**7E-03**	2.49E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	1.00E-01	Y	9.59E-02	9.59E-02	7.00E+00	**1E-02**	**1E-02**	3.56E-02	2.60E-05		**9E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	1.10E-01	1.10E-01	6.00E+01	**2E-03**	**2E-03**	4.10E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.10E-02	Y	5.85E-02	5.85E-02	8.00E+02	**7E-05**	**7E-05**	2.17E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	7.30E-01	Y	7.00E-01	7.00E-01	3.00E+01	**2E-02**	**2E-02**	2.60E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	2.30E-01	N	2.21E-01	2.21E-01	1.00E+00	**2E-01**	**2E-01**	8.19E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	2.40E-01	Y	2.30E-01	2.30E-01	NA	---	---	8.55E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	7.50E-01	N	7.19E-01	7.19E-01	5.00E+00	**1E-01**	**1E-01**	2.67E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	4.32E-01	4.32E-01	1.00E+02	**4E-03**	**4E-03**	1.60E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	9.80E-01	Y	9.40E-01	9.40E-01	9.77E+01	**1E-02**	**1E-02**	3.49E-01	2.30E-05		**8E-06**
ETHYL ACETATE	141-78-6	2.10E+00	Y	2.01E+00	2.01E+00	7.00E+01	**3E-02**	**3E-02**	7.48E-01	-		**---**
ETHYLBENZENE	100-41-4	3.20E-01	Y	3.07E-01	3.07E-01	1.00E+03	**3E-04**	**3E-04**	1.14E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	7.19E-01	7.19E-01	NA	---	---	2.67E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	5.90E+01	Y	5.66E+01	5.66E+01	2.00E+02	**3E-01**	**3E-01**	2.10E+01	-		**---**
M,P-XYLENE	108-38-3	1.30E+00	Y	1.25E+00	1.25E+00	1.00E+02	**1E-02**	**1E-02**	4.63E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	5.50E-01	N	5.27E-01	5.27E-01	6.00E+02	**9E-04**	**9E-04**	M	1.00E-08	M	**5E-09**
NAPHTHALENE	91-20-3	1.50E-01	Y	1.44E-01	1.44E-01	3.00E+00	**5E-02**	**5E-02**	5.34E-02	3.40E-05		**2E-06**
O-XYLENE	95-47-6	3.90E-01	Y	3.74E-01	3.74E-01	1.00E+02	**4E-03**	**4E-03**	1.39E-01	-		**---**
TETRACHLOROETHENE	127-18-4	3.90E+00	Y	3.74E+00	3.74E+00	4.00E+01	**9E-02**	**9E-02**	1.39E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	5.90E-02	Y	5.66E-02	5.66E-02	2.00E+00	**3E-02**	**3E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	5.30E-02	Y	5.08E-02	5.08E-02	8.00E+01	**6E-04**	**6E-04**	M	4.40E-06	M	**2E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0121H**	**Total Inhalation**	**1E+00**	**1E+00**	**5E-05**
		Based on NDs only	**9E-01**	**9E-01**	**3E-05**
		Based on Detects only	**6E-01**	**6E-01**	**2E-05**
		Site-related only	**1E-01**	**1E-01**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0121H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.50E-01	1.51E-01	9.04E-02	2.26E-01	7.53E-02	1.0E-08		2E-09	9E-10	2E-09	8E-10	**5E-09**
TRICHLOROETHENE	79-01-6	5.90E-02	1.62E-02	9.70E-03	2.42E-02	8.08E-03	1.0E-06	kidney	2E-08	1E-08	2E-08	8E-09	**6E-08**
TRICHLOROETHENE	79-01-6	5.90E-02	4.85E-03		1.62E-02		3.1E-06	NHL+liver	2E-08		5E-08		**7E-08**
VINYL CHLORIDE	75-01-4	5.30E-02	1.45E-02	8.71E-03	2.18E-02	7.26E-03	4.4E-06		6E-08	4E-08	1E-07	3E-08	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0122H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00E-02	N	1.92E-02	1.92E-02	NA	---	---	7.12E-03	5.80E-05		**4E-07**
1,3-BUTADIENE	106-99-0	2.30E-01	Y	2.21E-01	2.21E-01	2.00E+00	**1E-01**	**1E-01**	8.19E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	1.70E-01	Y	1.63E-01	1.63E-01	3.00E+01	**5E-03**	**5E-03**	6.05E-02	5.00E-06		**3E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.90E-02	N	1.82E-02	1.82E-02	2.00E-01	**9E-02**	**9E-02**	6.77E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	5.75E-01	5.75E-01	2.00E+00	**3E-01**	**3E-01**	2.14E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.20E-01	Y	5.95E-01	5.95E-01	6.00E+01	**1E-02**	**1E-02**	2.21E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.50E-02	N	6.23E-02	6.23E-02	9.00E+00	**7E-03**	**7E-03**	2.32E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	8.60E-02	Y	8.25E-02	8.25E-02	7.00E+00	**1E-02**	**1E-02**	3.06E-02	2.60E-05		**8E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	1.10E-01	1.10E-01	6.00E+01	**2E-03**	**2E-03**	4.10E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	7.20E-02	Y	6.90E-02	6.90E-02	8.00E+02	**9E-05**	**9E-05**	2.56E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	5.80E-01	Y	5.56E-01	5.56E-01	3.00E+01	**2E-02**	**2E-02**	2.07E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	2.25E-01	N	2.16E-01	2.16E-01	1.00E+00	**2E-01**	**2E-01**	8.01E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	2.30E-01	N	2.21E-01	2.21E-01	NA	---	---	8.19E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	7.50E-01	N	7.19E-01	7.19E-01	5.00E+00	**1E-01**	**1E-01**	2.67E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	4.60E-01	4.60E-01	1.00E+02	**5E-03**	**5E-03**	1.71E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	7.40E-01	Y	7.10E-01	7.10E-01	9.77E+01	**7E-03**	**7E-03**	2.64E-01	2.30E-05		**6E-06**
ETHYL ACETATE	141-78-6	6.30E+00	Y	6.04E+00	6.04E+00	7.00E+01	**9E-02**	**9E-02**	2.24E+00	-		**---**
ETHYLBENZENE	100-41-4	2.30E-01	Y	2.21E-01	2.21E-01	1.00E+03	**2E-04**	**2E-04**	8.19E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	7.19E-01	7.19E-01	NA	---	---	2.67E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	2.10E+01	Y	2.01E+01	2.01E+01	2.00E+02	**1E-01**	**1E-01**	7.48E+00	-		**---**
M,P-XYLENE	108-38-3	8.10E-01	Y	7.77E-01	7.77E-01	1.00E+02	**8E-03**	**8E-03**	2.88E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	7.00E-01	Y	6.71E-01	6.71E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	2.80E-02	N	2.68E-02	2.68E-02	3.00E+00	**9E-03**	**9E-03**	9.97E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	3.10E-01	Y	2.97E-01	2.97E-01	1.00E+02	**3E-03**	**3E-03**	1.10E-01	-		**---**
TETRACHLOROETHENE	127-18-4	4.80E+00	Y	4.60E+00	4.60E+00	4.00E+01	**1E-01**	**1E-01**	1.71E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	2.20E-02	Y	2.11E-02	2.11E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**5E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.00E-03	N	5.75E-03	5.75E-03	8.00E+01	**7E-05**	**7E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0122H**	**Total Inhalation**	**1E+00**	**1E+00**	**4E-05**
		Based on NDs only	**8E-01**	**8E-01**	**3E-05**
		Based on Detects only	**5E-01**	**5E-01**	**1E-05**
		Site-related only	**1E-01**	**1E-01**	**8E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0122H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.00E-01	1.92E-01	1.15E-01	2.88E-01	9.59E-02	1.0E-08		2E-09	1E-09	3E-09	1E-09	**7E-09**
TRICHLOROETHENE	79-01-6	2.20E-02	6.03E-03	3.62E-03	9.04E-03	3.01E-03	1.0E-06	kidney	6E-09	4E-09	9E-09	3E-09	**2E-08**
TRICHLOROETHENE	79-01-6	2.20E-02	1.81E-03		6.03E-03		3.1E-06	NHL+liver	6E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	6.00E-03	1.64E-03	9.86E-04	2.47E-03	8.22E-04	4.4E-06		7E-09	4E-09	1E-08	4E-09	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0133H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	2.06E-02	2.06E-02	NA	---	---	7.66E-03	5.80E-05		**4E-07**
1,3-BUTADIENE	106-99-0	9.50E-02	N	9.11E-02	9.11E-02	2.00E+00	**5E-02**	**5E-02**	3.38E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	1.50E-01	Y	1.44E-01	1.44E-01	3.00E+01	**5E-03**	**5E-03**	5.34E-02	5.00E-06		**3E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	1.92E-02	1.92E-02	2.00E-01	**1E-01**	**1E-01**	7.12E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	6.23E-01	6.23E-01	2.00E+00	**3E-01**	**3E-01**	2.32E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.00E-01	Y	4.79E-01	4.79E-01	6.00E+01	**8E-03**	**8E-03**	1.78E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	6.71E-02	6.71E-02	9.00E+00	**7E-03**	**7E-03**	2.49E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	2.50E-01	Y	2.40E-01	2.40E-01	7.00E+00	**3E-02**	**3E-02**	8.90E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	9.59E-02	9.59E-02	4.00E+00	**2E-02**	**2E-02**	3.56E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.25E-01	N	1.20E-01	1.20E-01	6.00E+01	**2E-03**	**2E-03**	4.45E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	2.80E-02	Y	2.68E-02	2.68E-02	8.00E+02	**3E-05**	**3E-05**	9.97E-03	1.10E-05		**1E-07**
BENZENE	71-43-2	9.70E-01	Y	9.30E-01	9.30E-01	3.00E+01	**3E-02**	**3E-02**	3.45E-01	7.80E-06		**3E-06**
BENZYL CHLORIDE	100-44-7	2.40E-01	N	2.30E-01	2.30E-01	1.00E+00	**2E-01**	**2E-01**	8.55E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	1.10E+00	Y	1.05E+00	1.05E+00	NA	---	---	3.92E-01	3.70E-05		**1E-05**
BROMOMETHANE	74-83-9	8.00E-01	N	7.67E-01	7.67E-01	5.00E+00	**2E-01**	**2E-01**	2.85E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	4.60E-01	4.60E-01	1.00E+02	**5E-03**	**5E-03**	1.71E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	4.70E+00	Y	4.51E+00	4.51E+00	9.77E+01	**5E-02**	**5E-02**	1.67E+00	2.30E-05		**4E-05**
ETHYL ACETATE	141-78-6	7.20E+00	Y	6.90E+00	6.90E+00	7.00E+01	**1E-01**	**1E-01**	2.56E+00	-		**---**
ETHYLBENZENE	100-41-4	3.50E-01	Y	3.36E-01	3.36E-01	1.00E+03	**3E-04**	**3E-04**	1.25E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	7.67E-01	7.67E-01	NA	---	---	2.85E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	2.50E+01	Y	2.40E+01	2.40E+01	2.00E+02	**1E-01**	**1E-01**	8.90E+00	-		**---**
M,P-XYLENE	108-38-3	1.10E+00	Y	1.05E+00	1.05E+00	1.00E+02	**1E-02**	**1E-02**	3.92E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	8.40E-01	Y	8.05E-01	8.05E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**8E-09**
NAPHTHALENE	91-20-3	2.65E-02	N	2.54E-02	2.54E-02	3.00E+00	**8E-03**	**8E-03**	9.44E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	4.80E-01	Y	4.60E-01	4.60E-01	1.00E+02	**5E-03**	**5E-03**	1.71E-01	-		**---**
TETRACHLOROETHENE	127-18-4	3.90E-01	Y	3.74E-01	3.74E-01	4.00E+01	**9E-03**	**9E-03**	1.39E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	2.40E-02	Y	2.30E-02	2.30E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**5E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-03	N	6.23E-03	6.23E-03	8.00E+01	**8E-05**	**8E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0133H**	**Total Inhalation**	**1E+00**	**1E+00**	**9E-05**
		Based on NDs only	**9E-01**	**9E-01**	**3E-05**
		Based on Detects only	**4E-01**	**4E-01**	**6E-05**
		Site-related only	**3E-02**	**3E-02**	**4E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0133H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.40E-01	2.30E-01	1.38E-01	3.45E-01	1.15E-01	1.0E-08		2E-09	1E-09	3E-09	1E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.40E-02	6.58E-03	3.95E-03	9.86E-03	3.29E-03	1.0E-06	kidney	7E-09	4E-09	1E-08	3E-09	**2E-08**
TRICHLOROETHENE	79-01-6	2.40E-02	1.97E-03		6.58E-03		3.1E-06	NHL+liver	6E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	6.50E-03	1.78E-03	1.07E-03	2.67E-03	8.90E-04	4.4E-06		8E-09	5E-09	1E-08	4E-09	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0135H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	4.05E-02	N	3.88E-02	3.88E-02	NA	---	---	1.44E-02	5.80E-05		**8E-07**
1,3-BUTADIENE	106-99-0	1.80E-01	N	1.73E-01	1.73E-01	2.00E+00	**9E-02**	**9E-02**	6.41E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	1.10E-01	N	1.05E-01	1.05E-01	3.00E+01	**4E-03**	**4E-03**	3.92E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	3.75E-02	N	3.60E-02	3.60E-02	2.00E-01	**2E-01**	**2E-01**	1.34E-02	1.60E-05		**2E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.20E+00	N	1.15E+00	1.15E+00	2.00E+00	**6E-01**	**6E-01**	4.27E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	7.60E-01	Y	7.29E-01	7.29E-01	6.00E+01	**1E-02**	**1E-02**	2.71E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	1.35E-01	N	1.29E-01	1.29E-01	9.00E+00	**1E-02**	**1E-02**	4.81E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	1.60E-01	Y	1.53E-01	1.53E-01	7.00E+00	**2E-02**	**2E-02**	5.70E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	1.90E-01	N	1.82E-01	1.82E-01	4.00E+00	**5E-02**	**5E-02**	6.77E-02	3.70E-06		**3E-07**
1,3,5-Trimethylbenzene	108-67-8	2.30E-01	N	2.21E-01	2.21E-01	6.00E+01	**4E-03**	**4E-03**	8.19E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	3.00E-02	Y	2.88E-02	2.88E-02	8.00E+02	**4E-05**	**4E-05**	1.07E-02	1.10E-05		**1E-07**
BENZENE	71-43-2	7.10E-01	Y	6.81E-01	6.81E-01	3.00E+01	**2E-02**	**2E-02**	2.53E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	4.50E-01	N	4.32E-01	4.32E-01	1.00E+00	**4E-01**	**4E-01**	1.60E-01	4.90E-05		**8E-06**
BROMODICHLOROMETHANE	75-27-4	4.60E-01	N	4.41E-01	4.41E-01	NA	---	---	1.64E-01	3.70E-05		**6E-06**
BROMOMETHANE	74-83-9	1.50E+00	N	1.44E+00	1.44E+00	5.00E+00	**3E-01**	**3E-01**	5.34E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.00E-01	Y	4.79E-01	4.79E-01	1.00E+02	**5E-03**	**5E-03**	1.78E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.70E+00	Y	1.63E+00	1.63E+00	9.77E+01	**2E-02**	**2E-02**	6.05E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	1.80E+01	Y	1.73E+01	1.73E+01	7.00E+01	**2E-01**	**2E-01**	6.41E+00	-		**---**
ETHYLBENZENE	100-41-4	1.20E+01	Y	1.15E+01	1.15E+01	1.00E+03	**1E-02**	**1E-02**	4.27E+00	2.50E-06		**1E-05**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.50E+00	N	1.44E+00	1.44E+00	NA	---	---	5.34E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL	67-63-0	1.40E+01	Y	1.34E+01	1.34E+01	2.00E+02	**7E-02**	**7E-02**	4.99E+00	-		**---**
M,P-XYLENE	108-38-3	4.10E+01	Y	3.93E+01	3.93E+01	1.00E+02	**4E-01**	**4E-01**	1.46E+01	-		**---**
METHYLENE CHLORIDE	75-09-2	6.00E-01	N	5.75E-01	5.75E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**6E-09**
NAPHTHALENE	91-20-3	1.60E-01	Y	1.53E-01	1.53E-01	3.00E+00	**5E-02**	**5E-02**	5.70E-02	3.40E-05		**2E-06**
O-XYLENE	95-47-6	1.20E+01	Y	1.15E+01	1.15E+01	1.00E+02	**1E-01**	**1E-01**	4.27E+00	-		**---**
TETRACHLOROETHENE	127-18-4	4.50E-01	Y	4.32E-01	4.32E-01	4.00E+01	**1E-02**	**1E-02**	1.60E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	5.50E-02	N	5.27E-02	5.27E-02	2.00E+00	**3E-02**	**3E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	1.20E-02	N	1.15E-02	1.15E-02	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**5E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0135H**	**Total Inhalation**	**3E+00**	**3E+00**	**9E-05**
		Based on NDs only	**2E+00**	**2E+00**	**6E-05**
		Based on Detects only	**1E+00**	**1E+00**	**3E-05**
		Site-related only	**4E-02**	**4E-02**	**4E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0135H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.00E-01	1.64E-01	9.86E-02	2.47E-01	8.22E-02	1.0E-08		2E-09	1E-09	2E-09	8E-10	**6E-09**
TRICHLOROETHENE	79-01-6	5.50E-02	1.51E-02	9.04E-03	2.26E-02	7.53E-03	1.0E-06	kidney	2E-08	9E-09	2E-08	8E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.50E-02	4.52E-03		1.51E-02		3.1E-06	NHL+liver	1E-08		5E-08		**6E-08**
VINYL CHLORIDE	75-01-4	1.20E-02	3.29E-03	1.97E-03	4.93E-03	1.64E-03	4.4E-06		1E-08	9E-09	2E-08	7E-09	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0137H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	2.06E-02	2.06E-02	NA	---	---	7.66E-03	5.80E-05		**4E-07**
1,3-BUTADIENE	106-99-0	9.50E-02	N	9.11E-02	9.11E-02	2.00E+00	**5E-02**	**5E-02**	3.38E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	1.80E-01	Y	1.73E-01	1.73E-01	3.00E+01	**6E-03**	**6E-03**	6.41E-02	5.00E-06		**3E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	1.92E-02	1.92E-02	2.00E-01	**1E-01**	**1E-01**	7.12E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	6.23E-01	6.23E-01	2.00E+00	**3E-01**	**3E-01**	2.32E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.10E+00	Y	1.05E+00	1.05E+00	6.00E+01	**2E-02**	**2E-02**	3.92E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	6.71E-02	6.71E-02	9.00E+00	**7E-03**	**7E-03**	2.49E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	9.30E-02	Y	8.92E-02	8.92E-02	7.00E+00	**1E-02**	**1E-02**	3.31E-02	2.60E-05		**9E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	9.59E-02	9.59E-02	4.00E+00	**2E-02**	**2E-02**	3.56E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	2.50E-01	Y	2.40E-01	2.40E-01	6.00E+01	**4E-03**	**4E-03**	8.90E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	7.67E-02	7.67E-02	8.00E+02	**1E-04**	**1E-04**	2.85E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	3.30E+00	Y	3.16E+00	3.16E+00	3.00E+01	**1E-01**	**1E-01**	1.18E+00	7.80E-06		**9E-06**
BENZYL CHLORIDE	100-44-7	2.40E-01	N	2.30E-01	2.30E-01	1.00E+00	**2E-01**	**2E-01**	8.55E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	2.45E-01	N	2.35E-01	2.35E-01	NA	---	---	8.73E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	7.67E-01	7.67E-01	5.00E+00	**2E-01**	**2E-01**	2.85E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	4.60E-01	4.60E-01	1.00E+02	**5E-03**	**5E-03**	1.71E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.50E+00	Y	1.44E+00	1.44E+00	9.77E+01	**1E-02**	**1E-02**	5.34E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	5.20E+00	Y	4.99E+00	4.99E+00	7.00E+01	**7E-02**	**7E-02**	1.85E+00	-		**---**
ETHYLBENZENE	100-41-4	1.80E+00	Y	1.73E+00	1.73E+00	1.00E+03	**2E-03**	**2E-03**	6.41E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	7.67E-01	7.67E-01	NA	---	---	2.85E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	4.80E+00	Y	4.60E+00	4.60E+00	2.00E+02	**2E-02**	**2E-02**	1.71E+00	-		**---**
M,P-XYLENE	108-38-3	8.80E+00	Y	8.44E+00	8.44E+00	1.00E+02	**8E-02**	**8E-02**	3.13E+00	-		**---**
METHYLENE CHLORIDE	75-09-2	9.40E-01	Y	9.01E-01	9.01E-01	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**9E-09**
NAPHTHALENE	91-20-3	2.80E-02	N	2.68E-02	2.68E-02	3.00E+00	**9E-03**	**9E-03**	9.97E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	2.30E+00	Y	2.21E+00	2.21E+00	1.00E+02	**2E-02**	**2E-02**	8.19E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.20E+00	Y	1.15E+00	1.15E+00	4.00E+01	**3E-02**	**3E-02**	4.27E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	1.30E-01	Y	1.25E-01	1.25E-01	2.00E+00	**6E-02**	**6E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	1.30E-02	Y	1.25E-02	1.25E-02	8.00E+01	**2E-04**	**2E-04**	M	4.40E-06	M	**6E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0137H**	**Total Inhalation**	**1E+00**	**1E+00**	**6E-05**
		Based on NDs only	**9E-01**	**9E-01**	**3E-05**
		Based on Detects only	**5E-01**	**5E-01**	**3E-05**
		Site-related only	**1E-01**	**1E-01**	**8E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0137H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.40E-01	2.58E-01	1.55E-01	3.86E-01	1.29E-01	1.0E-08		3E-09	2E-09	4E-09	1E-09	**9E-09**
TRICHLOROETHENE	79-01-6	1.30E-01	3.56E-02	2.14E-02	5.34E-02	1.78E-02	1.0E-06	kidney	4E-08	2E-08	5E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.30E-01	1.07E-02		3.56E-02		3.1E-06	NHL+liver	3E-08		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	1.30E-02	3.56E-03	2.14E-03	5.34E-03	1.78E-03	4.4E-06		2E-08	9E-09	2E-08	8E-09	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0139H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.30E-02	N	2.21E-02	2.21E-02	NA	---	---	8.19E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	1.30E+00	Y	1.25E+00	1.25E+00	2.00E+00	**6E-01**	**6E-01**	4.63E-01	3.00E-05		**1E-05**
1,4-DIOXANE	123-91-1	2.20E-01	Y	2.11E-01	2.11E-01	3.00E+01	**7E-03**	**7E-03**	7.84E-02	5.00E-06		**4E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.15E-02	N	2.06E-02	2.06E-02	2.00E-01	**1E-01**	**1E-01**	7.66E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	6.71E-01	6.71E-01	2.00E+00	**3E-01**	**3E-01**	2.49E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.40E-01	Y	4.22E-01	4.22E-01	6.00E+01	**7E-03**	**7E-03**	1.57E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	7.19E-02	7.19E-02	9.00E+00	**8E-03**	**8E-03**	2.67E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	4.90E-01	Y	4.70E-01	4.70E-01	7.00E+00	**7E-02**	**7E-02**	1.75E-01	2.60E-05		**5E-06**
1,2-DICHLOROPROPANE	78-87-5	1.10E-01	N	1.05E-01	1.05E-01	4.00E+00	**3E-02**	**3E-02**	3.92E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	1.25E-01	1.25E-01	6.00E+01	**2E-03**	**2E-03**	4.63E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.60E+01	Y	5.37E+01	5.37E+01	8.00E+02	**7E-02**	**7E-02**	1.99E+01	1.10E-05		**2E-04**
BENZENE	71-43-2	1.90E+00	Y	1.82E+00	1.82E+00	3.00E+01	**6E-02**	**6E-02**	6.77E-01	7.80E-06		**5E-06**
BENZYL CHLORIDE	100-44-7	2.60E-01	N	2.49E-01	2.49E-01	1.00E+00	**2E-01**	**2E-01**	9.26E-02	4.90E-05		**5E-06**
BROMODICHLOROMETHANE	75-27-4	2.60E-01	N	2.49E-01	2.49E-01	NA	---	---	9.26E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	1.90E+00	Y	1.82E+00	1.82E+00	5.00E+00	**4E-01**	**4E-01**	6.77E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	4.22E-01	4.22E-01	1.00E+02	**4E-03**	**4E-03**	1.57E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	1.00E+00	Y	9.59E-01	9.59E-01	9.77E+01	**1E-02**	**1E-02**	3.56E-01	2.30E-05		**8E-06**
ETHYL ACETATE	141-78-6	1.10E+01	Y	1.05E+01	1.05E+01	7.00E+01	**2E-01**	**2E-01**	3.92E+00	-		**---**
ETHYLBENZENE	100-41-4	5.30E-01	Y	5.08E-01	5.08E-01	1.00E+03	**5E-04**	**5E-04**	1.89E-01	2.50E-06		**5E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	8.15E-01	8.15E-01	NA	---	---	3.03E-01	2.20E-05		**7E-06**
ISOPROPYL ALCOHOL	67-63-0	3.60E+02	Y	3.45E+02	3.45E+02	2.00E+02	**2E+00**	**2E+00**	1.28E+02	-		**---**
M,P-XYLENE	108-38-3	1.70E+00	Y	1.63E+00	1.63E+00	1.00E+02	**2E-02**	**2E-02**	6.05E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.45E-01	N	3.31E-01	3.31E-01	6.00E+02	**6E-04**	**6E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	3.05E-02	N	2.92E-02	2.92E-02	3.00E+00	**1E-02**	**1E-02**	1.09E-02	3.40E-05		**4E-07**
O-XYLENE	95-47-6	4.40E-01	Y	4.22E-01	4.22E-01	1.00E+02	**4E-03**	**4E-03**	1.57E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.50E-01	Y	1.44E-01	1.44E-01	4.00E+01	**4E-03**	**4E-03**	5.34E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	7.00E-03	N	6.71E-03	6.71E-03	8.00E+01	**8E-05**	**8E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0139H**	**Total Inhalation**	**4E+00**	**4E+00**	**3E-04**
		Based on NDs only	**8E-01**	**8E-01**	**3E-05**
		Based on Detects only	**3E+00**	**3E+00**	**3E-04**
		Site-related only	**3E-02**	**3E-02**	**5E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0139H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.45E-01	9.45E-02	5.67E-02	1.42E-01	4.73E-02	1.0E-08		9E-10	6E-10	1E-09	5E-10	**3E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	7.00E-03	1.92E-03	1.15E-03	2.88E-03	9.59E-04	4.4E-06		8E-09	5E-09	1E-08	4E-09	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0145H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	1.05E-02	1.05E-02	NA	---	---	3.92E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	1.78E-02	3.00E-05		**5E-07**
1,4-DIOXANE	123-91-1	7.50E-02	N	7.19E-02	7.19E-02	3.00E+01	**2E-03**	**2E-03**	2.67E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	6.71E-03	6.71E-03	2.00E-01	**3E-02**	**3E-02**	2.49E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.90E-01	N	4.70E-01	4.70E-01	2.00E+00	**2E-01**	**2E-01**	1.75E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.50E-01	Y	1.44E-01	1.44E-01	6.00E+01	**2E-03**	**2E-03**	5.34E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.35E-02	N	3.21E-02	3.21E-02	9.00E+00	**4E-03**	**4E-03**	1.19E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	8.30E-02	Y	7.96E-02	7.96E-02	7.00E+00	**1E-02**	**1E-02**	2.96E-02	2.60E-05		**8E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	5.75E-02	5.75E-02	6.00E+01	**1E-03**	**1E-03**	2.14E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	2.80E+00	Y	2.68E+00	2.68E+00	8.00E+02	**3E-03**	**3E-03**	9.97E-01	1.10E-05		**1E-05**
BENZENE	71-43-2	4.10E-01	Y	3.93E-01	3.93E-01	3.00E+01	**1E-02**	**1E-02**	1.46E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	8.15E-02	8.15E-02	1.00E+00	**8E-02**	**8E-02**	3.03E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	1.25E-01	1.25E-01	NA	---	---	4.63E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	6.50E-01	N	6.23E-01	6.23E-01	5.00E+00	**1E-01**	**1E-01**	2.32E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	7.60E-01	Y	7.29E-01	7.29E-01	1.00E+02	**7E-03**	**7E-03**	2.71E-01	6.00E-06		**2E-06**
CHLOROFORM	67-66-3	3.90E-01	Y	3.74E-01	3.74E-01	9.77E+01	**4E-03**	**4E-03**	1.39E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.30E-01	Y	1.25E-01	1.25E-01	1.00E+03	**1E-04**	**1E-04**	4.63E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	6.23E-01	6.23E-01	NA	**---**	**---**	2.32E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL	67-63-0	1.50E+01	Y	1.44E+01	1.44E+01	2.00E+02	**7E-02**	**7E-02**	5.34E+00	-		**---**
M,P-XYLENE	108-38-3	4.10E-01	Y	3.93E-01	3.93E-01	1.00E+02	**4E-03**	**4E-03**	1.46E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	4.30E+00	Y	4.12E+00	4.12E+00	6.00E+02	**7E-03**	**7E-03**	M	1.00E-08	M	**4E-08**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.50E-01	Y	1.44E-01	1.44E-01	1.00E+02	**1E-03**	**1E-03**	5.34E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.70E+00	Y	4.51E+00	4.51E+00	4.00E+01	**1E-01**	**1E-01**	1.67E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	4.50E-02	Y	4.32E-02	4.32E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**9E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	8.00E-03	N	7.67E-03	7.67E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0145H**	**Total Inhalation**	**8E-01**	**8E-01**	**3E-05**
		Based on NDs only	**5E-01**	**5E-01**	**2E-05**
		Based on Detects only	**3E-01**	**3E-01**	**2E-05**
		Site-related only	**1E-01**	**1E-01**	**7E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0145H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.30E+00	1.18E+00	7.07E-01	1.77E+00	5.89E-01	1.0E-08		1E-08	7E-09	2E-08	6E-09	**4E-08**
TRICHLOROETHENE	79-01-6	4.50E-02	1.23E-02	7.40E-03	1.85E-02	6.16E-03	1.0E-06	kidney	1E-08	7E-09	2E-08	6E-09	**4E-08**
TRICHLOROETHENE	79-01-6	4.50E-02	3.70E-03		1.23E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	8.00E-03	2.19E-03	1.32E-03	3.29E-03	1.10E-03	4.4E-06		1E-08	6E-09	1E-08	5E-09	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0146H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.25E-02	N	2.16E-02	2.16E-02	NA	---	---	8.01E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	1.00E-01	N	9.59E-02	9.59E-02	2.00E+00	**5E-02**	**5E-02**	3.56E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	2.30E-01	Y	2.21E-01	2.21E-01	3.00E+01	**7E-03**	**7E-03**	8.19E-02	5.00E-06		**4E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.10E-02	N	2.01E-02	2.01E-02	2.00E-01	**1E-01**	**1E-01**	7.48E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.00E+00	N	9.59E-01	9.59E-01	2.00E+00	**5E-01**	**5E-01**	3.56E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.45E-01	N	1.39E-01	1.39E-01	6.00E+01	**2E-03**	**2E-03**	5.16E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	7.19E-02	7.19E-02	9.00E+00	**8E-03**	**8E-03**	2.67E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	1.34E-01	1.34E-01	7.00E+00	**2E-02**	**2E-02**	4.99E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	1.90E-01	N	1.82E-01	1.82E-01	4.00E+00	**5E-02**	**5E-02**	6.77E-02	3.70E-06		**3E-07**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	1.25E-01	1.25E-01	6.00E+01	**2E-03**	**2E-03**	4.63E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.05E-01	N	1.01E-01	1.01E-01	8.00E+02	**1E-04**	**1E-04**	3.74E-02	1.10E-05		**4E-07**
BENZENE	71-43-2	6.80E-01	Y	6.52E-01	6.52E-01	3.00E+01	**2E-02**	**2E-02**	2.42E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	2.50E-01	N	2.40E-01	2.40E-01	1.00E+00	**2E-01**	**2E-01**	8.90E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	2.60E-01	N	2.49E-01	2.49E-01	NA	---	---	9.26E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	1.35E+00	N	1.29E+00	1.29E+00	5.00E+00	**3E-01**	**3E-01**	4.81E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	6.40E-01	Y	6.14E-01	6.14E-01	1.00E+02	**6E-03**	**6E-03**	2.28E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.30E+00	Y	1.25E+00	1.25E+00	9.77E+01	**1E-02**	**1E-02**	4.63E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	3.00E+00	Y	2.88E+00	2.88E+00	7.00E+01	**4E-02**	**4E-02**	1.07E+00	-		**---**
ETHYLBENZENE	100-41-4	1.70E-01	Y	1.63E-01	1.63E-01	1.00E+03	**2E-04**	**2E-04**	6.05E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.35E+00	N	1.29E+00	1.29E+00	NA	---	---	4.81E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL	67-63-0	9.00E+01	Y	8.63E+01	8.63E+01	2.00E+02	**4E-01**	**4E-01**	3.21E+01	-		**---**
M,P-XYLENE	108-38-3	5.30E-01	Y	5.08E-01	5.08E-01	1.00E+02	**5E-03**	**5E-03**	1.89E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.35E-01	N	3.21E-01	3.21E-01	6.00E+02	**5E-04**	**5E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	2.90E-02	N	2.78E-02	2.78E-02	3.00E+00	**9E-03**	**9E-03**	1.03E-02	3.40E-05		**4E-07**
O-XYLENE	95-47-6	2.20E-01	Y	2.11E-01	2.11E-01	1.00E+02	**2E-03**	**2E-03**	7.84E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.00E+01	Y	9.59E+00	9.59E+00	4.00E+01	**2E-01**	**2E-01**	3.56E+00	2.60E-07		**9E-07**
TRICHLOROETHENE	79-01-6	2.80E-02	Y	2.68E-02	2.68E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	1.65E-02	N	1.58E-02	1.58E-02	8.00E+01	**2E-04**	**2E-04**	M	4.40E-06	M	**7E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0146H**	**Total Inhalation**	**2E+00**	**2E+00**	**5E-05**
		Based on NDs only	**1E+00**	**1E+00**	**4E-05**
		Based on Detects only	**8E-01**	**8E-01**	**2E-05**
		Site-related only	**3E-01**	**3E-01**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0146H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.35E-01	9.18E-02	5.51E-02	1.38E-01	4.59E-02	1.0E-08		9E-10	6E-10	1E-09	5E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.80E-02	7.67E-03	4.60E-03	1.15E-02	3.84E-03	1.0E-06	kidney	8E-09	5E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.80E-02	2.30E-03		7.67E-03		3.1E-06	NHL+liver	7E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	1.65E-02	4.52E-03	2.71E-03	6.78E-03	2.26E-03	4.4E-06		2E-08	1E-08	3E-08	1E-08	**7E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0148H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.20E-02	N	2.11E-02	2.11E-02	NA	---	---	7.84E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	1.00E-01	N	9.59E-02	9.59E-02	2.00E+00	**5E-02**	**5E-02**	3.56E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	1.60E-01	Y	1.53E-01	1.53E-01	3.00E+01	**5E-03**	**5E-03**	5.70E-02	5.00E-06		**3E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.05E-02	N	1.97E-02	1.97E-02	2.00E-01	**1E-01**	**1E-01**	7.30E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	6.23E-01	6.23E-01	2.00E+00	**3E-01**	**3E-01**	2.32E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E+00	Y	1.15E+00	1.15E+00	6.00E+01	**2E-02**	**2E-02**	4.27E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	7.19E-02	7.19E-02	9.00E+00	**8E-03**	**8E-03**	2.67E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	1.05E-01	1.05E-01	7.00E+00	**2E-02**	**2E-02**	3.92E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	1.01E-01	1.01E-01	4.00E+00	**3E-02**	**3E-02**	3.74E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	3.90E-01	Y	3.74E-01	3.74E-01	6.00E+01	**6E-03**	**6E-03**	1.39E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.10E-02	Y	3.93E-02	3.93E-02	8.00E+02	**5E-05**	**5E-05**	1.46E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	8.80E-01	Y	8.44E-01	8.44E-01	3.00E+01	**3E-02**	**3E-02**	3.13E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	2.35E-01	2.35E-01	1.00E+00	**2E-01**	**2E-01**	8.73E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	2.50E-01	N	2.40E-01	2.40E-01	NA	---	---	8.90E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	7.67E-01	7.67E-01	5.00E+00	**2E-01**	**2E-01**	2.85E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.60E-01	Y	5.37E-01	5.37E-01	1.00E+02	**5E-03**	**5E-03**	1.99E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.50E+00	Y	1.44E+00	1.44E+00	9.77E+01	**1E-02**	**1E-02**	5.34E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	8.40E+00	Y	8.05E+00	8.05E+00	7.00E+01	**1E-01**	**1E-01**	2.99E+00	-		**---**
ETHYLBENZENE	100-41-4	6.70E-01	Y	6.42E-01	6.42E-01	1.00E+03	**6E-04**	**6E-04**	2.39E-01	2.50E-06		**6E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	7.67E-01	7.67E-01	NA	---	---	2.85E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	6.30E+01	Y	6.04E+01	6.04E+01	2.00E+02	**3E-01**	**3E-01**	2.24E+01	-		**---**
M,P-XYLENE	108-38-3	2.00E+00	Y	1.92E+00	1.92E+00	1.00E+02	**2E-02**	**2E-02**	7.12E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	4.40E+01	Y	4.22E+01	4.22E+01	6.00E+02	**7E-02**	**7E-02**	M	1.00E-08	M	**4E-07**
NAPHTHALENE	91-20-3	5.70E-02	Y	5.47E-02	5.47E-02	3.00E+00	**2E-02**	**2E-02**	2.03E-02	3.40E-05		**7E-07**
O-XYLENE	95-47-6	7.80E-01	Y	7.48E-01	7.48E-01	1.00E+02	**7E-03**	**7E-03**	2.78E-01	-		**---**
TETRACHLOROETHENE	127-18-4	2.20E+00	Y	2.11E+00	2.11E+00	4.00E+01	**5E-02**	**5E-02**	7.84E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-03	N	6.23E-03	6.23E-03	8.00E+01	**8E-05**	**8E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0148H**	**Total Inhalation**	**2E+00**	**2E+00**	**5E-05**
		Based on NDs only	**9E-01**	**9E-01**	**3E-05**
		Based on Detects only	**7E-01**	**7E-01**	**2E-05**
		Site-related only	**8E-02**	**8E-02**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0148H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.40E+01	1.21E+01	7.23E+00	1.81E+01	6.03E+00	1.0E-08		1E-07	7E-08	2E-07	6E-08	**4E-07**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	6.50E-03	1.78E-03	1.07E-03	2.67E-03	8.90E-04	4.4E-06		8E-09	5E-09	1E-08	4E-09	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0153H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.05E-02	N	1.97E-02	1.97E-02	NA	---	---	7.30E-03	5.80E-05		**4E-07**
1,3-BUTADIENE	106-99-0	9.00E-02	N	8.63E-02	8.63E-02	2.00E+00	**4E-02**	**4E-02**	3.21E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	1.90E-01	Y	1.82E-01	1.82E-01	3.00E+01	**6E-03**	**6E-03**	6.77E-02	5.00E-06		**3E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.90E-02	N	1.82E-02	1.82E-02	2.00E-01	**9E-02**	**9E-02**	6.77E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	5.75E-01	5.75E-01	2.00E+00	**3E-01**	**3E-01**	2.14E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.40E-01	Y	4.22E-01	4.22E-01	6.00E+01	**7E-03**	**7E-03**	1.57E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	6.71E-02	6.71E-02	9.00E+00	**7E-03**	**7E-03**	2.49E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	1.05E-01	1.05E-01	7.00E+00	**2E-02**	**2E-02**	3.92E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	1.10E-01	1.10E-01	6.00E+01	**2E-03**	**2E-03**	4.10E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	7.50E-02	N	7.19E-02	7.19E-02	8.00E+02	**9E-05**	**9E-05**	2.67E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	7.10E-01	Y	6.81E-01	6.81E-01	3.00E+01	**2E-02**	**2E-02**	2.53E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	2.30E-01	N	2.21E-01	2.21E-01	1.00E+00	**2E-01**	**2E-01**	8.19E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	2.30E-01	N	2.21E-01	2.21E-01	NA	---	---	8.19E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	7.50E-01	N	7.19E-01	7.19E-01	5.00E+00	**1E-01**	**1E-01**	2.67E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	4.22E-01	4.22E-01	1.00E+02	**4E-03**	**4E-03**	1.57E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	1.10E+00	Y	1.05E+00	1.05E+00	9.77E+01	**1E-02**	**1E-02**	3.92E-01	2.30E-05		**9E-06**
ETHYL ACETATE	141-78-6	8.00E+00	Y	7.67E+00	7.67E+00	7.00E+01	**1E-01**	**1E-01**	2.85E+00	-		**---**
ETHYLBENZENE	100-41-4	2.80E-01	Y	2.68E-01	2.68E-01	1.00E+03	**3E-04**	**3E-04**	9.97E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	7.19E-01	7.19E-01	NA	---	---	2.67E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	7.00E+01	Y	6.71E+01	6.71E+01	2.00E+02	**3E-01**	**3E-01**	2.49E+01	-		**---**
M,P-XYLENE	108-38-3	9.30E-01	Y	8.92E-01	8.92E-01	1.00E+02	**9E-03**	**9E-03**	3.31E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	6.10E-01	Y	5.85E-01	5.85E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**6E-09**
NAPHTHALENE	91-20-3	2.80E-02	N	2.68E-02	2.68E-02	3.00E+00	**9E-03**	**9E-03**	9.97E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	3.20E-01	Y	3.07E-01	3.07E-01	1.00E+02	**3E-03**	**3E-03**	1.14E-01	-		**---**
TETRACHLOROETHENE	127-18-4	8.20E-01	Y	7.86E-01	7.86E-01	4.00E+01	**2E-02**	**2E-02**	2.92E-01	2.60E-07		**8E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.00E-03	N	5.75E-03	5.75E-03	8.00E+01	**7E-05**	**7E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0153H**	**Total Inhalation**	**1E+00**	**1E+00**	**4E-05**
		Based on NDs only	**9E-01**	**9E-01**	**3E-05**
		Based on Detects only	**5E-01**	**5E-01**	**1E-05**
		Site-related only	**5E-02**	**5E-02**	**5E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0153H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.10E-01	1.67E-01	1.00E-01	2.51E-01	8.36E-02	1.0E-08		2E-09	1E-09	3E-09	8E-10	**6E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	6.00E-03	1.64E-03	9.86E-04	2.47E-03	8.22E-04	4.4E-06		7E-09	4E-09	1E-08	4E-09	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0162H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.50E-02	N	2.40E-02	2.40E-02	NA	---	---	8.90E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	1.15E-01	N	1.10E-01	1.10E-01	2.00E+00	**6E-02**	**6E-02**	4.10E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	2.00E-01	Y	1.92E-01	1.92E-01	3.00E+01	**6E-03**	**6E-03**	7.12E-02	5.00E-06		**4E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.35E-02	N	2.25E-02	2.25E-02	2.00E-01	**1E-01**	**1E-01**	8.37E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	7.50E-01	N	7.19E-01	7.19E-01	2.00E+00	**4E-01**	**4E-01**	2.67E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E+00	Y	1.15E+00	1.15E+00	6.00E+01	**2E-02**	**2E-02**	4.27E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	8.50E-02	N	8.15E-02	8.15E-02	9.00E+00	**9E-03**	**9E-03**	3.03E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	9.60E-01	Y	9.21E-01	9.21E-01	7.00E+00	**1E-01**	**1E-01**	3.42E-01	2.60E-05		**9E-06**
1,2-DICHLOROPROPANE	78-87-5	1.20E-01	N	1.15E-01	1.15E-01	4.00E+00	**3E-02**	**3E-02**	4.27E-02	3.70E-06		**2E-07**
1,3,5-Trimethylbenzene	108-67-8	2.90E-01	Y	2.78E-01	2.78E-01	6.00E+01	**5E-03**	**5E-03**	1.03E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.50E-02	N	9.11E-02	9.11E-02	8.00E+02	**1E-04**	**1E-04**	3.38E-02	1.10E-05		**4E-07**
BENZENE	71-43-2	2.50E+00	Y	2.40E+00	2.40E+00	3.00E+01	**8E-02**	**8E-02**	8.90E-01	7.80E-06		**7E-06**
BENZYL CHLORIDE	100-44-7	2.80E-01	N	2.68E-01	2.68E-01	1.00E+00	**3E-01**	**3E-01**	9.97E-02	4.90E-05		**5E-06**
BROMODICHLOROMETHANE	75-27-4	2.85E-01	N	2.73E-01	2.73E-01	NA	---	---	1.02E-01	3.70E-05		**4E-06**
BROMOMETHANE	74-83-9	9.50E-01	N	9.11E-01	9.11E-01	5.00E+00	**2E-01**	**2E-01**	3.38E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	4.60E-01	4.60E-01	1.00E+02	**5E-03**	**5E-03**	1.71E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	6.80E-01	Y	6.52E-01	6.52E-01	9.77E+01	**7E-03**	**7E-03**	2.42E-01	2.30E-05		**6E-06**
ETHYL ACETATE	141-78-6	6.50E-01	Y	6.23E-01	6.23E-01	7.00E+01	**9E-03**	**9E-03**	2.32E-01	-		**---**
ETHYLBENZENE	100-41-4	1.20E+00	Y	1.15E+00	1.15E+00	1.00E+03	**1E-03**	**1E-03**	4.27E-01	2.50E-06		**1E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	9.00E-01	N	8.63E-01	8.63E-01	NA	---	---	3.21E-01	2.20E-05		**7E-06**
ISOPROPYL ALCOHOL	67-63-0	1.10E+01	Y	1.05E+01	1.05E+01	2.00E+02	**5E-02**	**5E-02**	3.92E+00	-		**---**
M,P-XYLENE	108-38-3	5.20E+00	Y	4.99E+00	4.99E+00	1.00E+02	**5E-02**	**5E-02**	1.85E+00	-		**---**
METHYLENE CHLORIDE	75-09-2	7.50E-01	Y	7.19E-01	7.19E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	2.75E-02	N	2.64E-02	2.64E-02	3.00E+00	**9E-03**	**9E-03**	9.79E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	1.50E+00	Y	1.44E+00	1.44E+00	1.00E+02	**1E-02**	**1E-02**	5.34E-01	-		**---**
TETRACHLOROETHENE	127-18-4	5.20E-01	Y	4.99E-01	4.99E-01	4.00E+01	**1E-02**	**1E-02**	1.85E-01	2.60E-07		**5E-08**
TRICHLOROETHENE	79-01-6	2.90E-02	Y	2.78E-02	2.78E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	7.50E-03	N	7.19E-03	7.19E-03	8.00E+01	**9E-05**	**9E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0162H**	**Total Inhalation**	**1E+00**	**1E+00**	**6E-05**
		Based on NDs only	**1E+00**	**1E+00**	**4E-05**
		Based on Detects only	**4E-01**	**4E-01**	**2E-05**
		Site-related only	**3E-02**	**3E-02**	**5E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0162H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.50E-01	2.05E-01	1.23E-01	3.08E-01	1.03E-01	1.0E-08		2E-09	1E-09	3E-09	1E-09	**7E-09**
TRICHLOROETHENE	79-01-6	2.90E-02	7.95E-03	4.77E-03	1.19E-02	3.97E-03	1.0E-06	kidney	8E-09	5E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.90E-02	2.38E-03		7.95E-03		3.1E-06	NHL+liver	7E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	7.50E-03	2.05E-03	1.23E-03	3.08E-03	1.03E-03	4.4E-06		9E-09	5E-09	1E-08	5E-09	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0166H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00E-02	N	1.92E-02	1.92E-02	NA	---	---	7.12E-03	5.80E-05		**4E-07**
1,3-BUTADIENE	106-99-0	9.00E-02	N	8.63E-02	8.63E-02	2.00E+00	**4E-02**	**4E-02**	3.21E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	1.50E-01	Y	1.44E-01	1.44E-01	3.00E+01	**5E-03**	**5E-03**	5.34E-02	5.00E-06		**3E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.85E-02	N	1.77E-02	1.77E-02	2.00E-01	**9E-02**	**9E-02**	6.59E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.10E+00	N	1.05E+00	1.05E+00	2.00E+00	**5E-01**	**5E-01**	3.92E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.20E-01	Y	3.07E-01	3.07E-01	6.00E+01	**5E-03**	**5E-03**	1.14E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.50E-02	N	6.23E-02	6.23E-02	9.00E+00	**7E-03**	**7E-03**	2.32E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	1.05E-01	1.05E-01	7.00E+00	**2E-02**	**2E-02**	3.92E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	1.10E-01	1.10E-01	6.00E+01	**2E-03**	**2E-03**	4.10E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	7.50E-02	N	7.19E-02	7.19E-02	8.00E+02	**9E-05**	**9E-05**	2.67E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	6.20E-01	Y	5.95E-01	5.95E-01	3.00E+01	**2E-02**	**2E-02**	2.21E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	2.25E-01	N	2.16E-01	2.16E-01	1.00E+00	**2E-01**	**2E-01**	8.01E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	2.25E-01	N	2.16E-01	2.16E-01	NA	---	---	8.01E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	7.50E-01	N	7.19E-01	7.19E-01	5.00E+00	**1E-01**	**1E-01**	2.67E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	4.51E-01	4.51E-01	1.00E+02	**5E-03**	**5E-03**	1.67E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.60E+00	Y	1.53E+00	1.53E+00	9.77E+01	**2E-02**	**2E-02**	5.70E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	1.40E+01	Y	1.34E+01	1.34E+01	7.00E+01	**2E-01**	**2E-01**	4.99E+00	-		---
ETHYLBENZENE	100-41-4	3.30E-01	Y	3.16E-01	3.16E-01	1.00E+03	**3E-04**	**3E-04**	1.18E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	8.15E-01	8.15E-01	NA	---	---	3.03E-01	2.20E-05		**7E-06**
ISOPROPYL ALCOHOL	67-63-0	3.80E+02	Y	3.64E+02	3.64E+02	2.00E+02	**2E+00**	**2E+00**	1.35E+02	-		---
M,P-XYLENE	108-38-3	1.10E+00	Y	1.05E+00	1.05E+00	1.00E+02	**1E-02**	**1E-02**	3.92E-01	-		---
METHYLENE CHLORIDE	75-09-2	1.60E+00	Y	1.53E+00	1.53E+00	6.00E+02	**3E-03**	**3E-03**	M	1.00E-08	M	**2E-08**
NAPHTHALENE	91-20-3	2.95E-02	N	2.83E-02	2.83E-02	3.00E+00	**9E-03**	**9E-03**	1.05E-02	3.40E-05		**4E-07**
O-XYLENE	95-47-6	3.60E-01	Y	3.45E-01	3.45E-01	1.00E+02	**3E-03**	**3E-03**	1.28E-01	-		---
TETRACHLOROETHENE	127-18-4	5.70E+00	Y	5.47E+00	5.47E+00	4.00E+01	**1E-01**	**1E-01**	2.03E+00	2.60E-07		**5E-07**
TRICHLOROETHENE	79-01-6	9.80E-01	Y	9.40E-01	9.40E-01	2.00E+00	**5E-01**	**5E-01**	M	4.10E-06	M	**2E-06**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		---
VINYL CHLORIDE	75-01-4	6.00E-03	N	5.75E-03	5.75E-03	8.00E+01	**7E-05**	**7E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0166H**	**Total Inhalation**	**4E+00**	**4E+00**	**5E-05**
		Based on NDs only	**1E+00**	**1E+00**	**3E-05**
		Based on Detects only	**3E+00**	**3E+00**	**2E-05**
		Site-related only	**6E-01**	**6E-01**	**3E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0166H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.60E+00	4.38E-01	2.63E-01	6.58E-01	2.19E-01	1.0E-08		4E-09	3E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	9.80E-01	2.68E-01	1.61E-01	4.03E-01	1.34E-01	1.0E-06	kidney	3E-07	2E-07	4E-07	1E-07	**1E-06**
TRICHLOROETHENE	79-01-6	9.80E-01	8.05E-02		2.68E-01		3.1E-06	NHL+liver	2E-07		8E-07		**1E-06**
VINYL CHLORIDE	75-01-4	6.00E-03	1.64E-03	9.86E-04	2.47E-03	8.22E-04	4.4E-06		7E-09	4E-09	1E-08	4E-09	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0172H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	9.59E-01	9.59E-01		TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.30E-02	N	2.21E-02	2.21E-02	NA	---	---	8.19E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	4.75E-02	N	4.55E-02	4.55E-02	2.00E+00	**2E-02**	**2E-02**	1.69E-02	3.00E-05		**5E-07**
1,4-DIOXANE	123-91-1	8.00E-02	N	7.67E-02	7.67E-02	3.00E+01	**3E-03**	**3E-03**	2.85E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.15E-02	N	1.10E-02	1.10E-02	2.00E-01	**6E-02**	**6E-02**	4.10E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.75E-01	N	4.55E-01	4.55E-01	2.00E+00	**2E-01**	**2E-01**	1.69E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.20E-01	Y	4.99E-01	4.99E-01	6.00E+01	**8E-03**	**8E-03**	1.85E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.15E-02	N	3.98E-02	3.98E-02	9.00E+00	**4E-03**	**4E-03**	1.48E-02	6.00E-04		**9E-06**
1,2-DICHLOROETHANE	107-06-2	7.30E-02	Y	7.00E-02	7.00E-02	7.00E+00	**1E-02**	**1E-02**	2.60E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	8.63E-02	8.63E-02	4.00E+00	**2E-02**	**2E-02**	3.21E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.60E-01	Y	1.53E-01	1.53E-01	6.00E+01	**3E-03**	**3E-03**	5.70E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.35E-02	N	4.17E-02	4.17E-02	8.00E+02	**5E-05**	**5E-05**	1.55E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	3.40E-01	Y	3.26E-01	3.26E-01	3.00E+01	**1E-02**	**1E-02**	1.21E-01	7.80E-06		**9E-07**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	1.01E-01	1.01E-01	1.00E+00	**1E-01**	**1E-01**	3.74E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	1.05E-01	N	1.01E-01	1.01E-01	NA	---	---	3.74E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	5.50E-01	N	5.27E-01	5.27E-01	5.00E+00	**1E-01**	**1E-01**	1.96E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	3.93E-01	3.93E-01	1.00E+02	**4E-03**	**4E-03**	1.46E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	1.40E-01	Y	1.34E-01	1.34E-01	9.77E+01	**1E-03**	**1E-03**	4.99E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	9.80E-02	Y	9.40E-02	9.40E-02	1.00E+03	**9E-05**	**9E-05**	3.49E-02	2.50E-06		**9E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.90E-01	N	3.74E-01	3.74E-01	NA	---	---	1.39E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	1.20E+01	Y	1.15E+01	1.15E+01	2.00E+02	**6E-02**	**6E-02**	4.27E+00	-		**---**
M,P-XYLENE	108-38-3	3.30E-01	Y	3.16E-01	3.16E-01	1.00E+02	**3E-03**	**3E-03**	1.18E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	5.40E-01	Y	5.18E-01	5.18E-01	6.00E+02	**9E-04**	**9E-04**	M	1.00E-08	M	**5E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.20E-01	Y	1.15E-01	1.15E-01	1.00E+02	**1E-03**	**1E-03**	4.27E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.30E+00	Y	4.12E+00	4.12E+00	4.00E+01	**1E-01**	**1E-01**	1.53E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	2.80E-02	Y	2.68E-02	2.68E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	3.65E-03	N	3.50E-03	3.50E-03	8.00E+01	**4E-05**	**4E-05**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0172H**	**Total Inhalation**	**8E-01**	**8E-01**	**2E-05**
		Based on NDs only	**5E-01**	**5E-01**	**2E-05**
		Based on Detects only	**2E-01**	**2E-01**	**4E-06**
		Site-related only	**1E-01**	**1E-01**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0172H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.40E-01	1.48E-01	8.88E-02	2.22E-01	7.40E-02	1.0E-08		1E-09	9E-10	2E-09	7E-10	**5E-09**
TRICHLOROETHENE	79-01-6	2.80E-02	7.67E-03	4.60E-03	1.15E-02	3.84E-03	1.0E-06	kidney	8E-09	5E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.80E-02	2.30E-03		7.67E-03		3.1E-06	NHL+liver	7E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	3.65E-03	1.00E-03	6.00E-04	1.50E-03	5.00E-04	4.4E-06		4E-09	3E-09	7E-09	2E-09	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0173H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.20E-02	N	2.11E-02	2.11E-02	NA	---	---	7.84E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	1.00E-01	N	9.59E-02	9.59E-02	2.00E+00	**5E-02**	**5E-02**	3.56E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	1.40E-01	Y	1.34E-01	1.34E-01	3.00E+01	**4E-03**	**4E-03**	4.99E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.05E-02	N	1.97E-02	1.97E-02	2.00E-01	**1E-01**	**1E-01**	7.30E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	6.23E-01	6.23E-01	2.00E+00	**3E-01**	**3E-01**	2.32E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.70E-01	Y	4.51E-01	4.51E-01	6.00E+01	**8E-03**	**8E-03**	1.67E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	6.71E-02	6.71E-02	9.00E+00	**7E-03**	**7E-03**	2.49E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	2.00E-01	Y	1.92E-01	1.92E-01	7.00E+00	**3E-02**	**3E-02**	7.12E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	1.01E-01	1.01E-01	4.00E+00	**3E-02**	**3E-02**	3.74E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.25E-01	N	1.20E-01	1.20E-01	6.00E+01	**2E-03**	**2E-03**	4.45E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	7.67E-02	7.67E-02	8.00E+02	**1E-04**	**1E-04**	2.85E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	5.70E-01	Y	5.47E-01	5.47E-01	3.00E+01	**2E-02**	**2E-02**	2.03E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	2.35E-01	2.35E-01	1.00E+00	**2E-01**	**2E-01**	8.73E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	2.50E-01	N	2.40E-01	2.40E-01	NA	---	---	8.90E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	7.67E-01	7.67E-01	5.00E+00	**2E-01**	**2E-01**	2.85E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	4.32E-01	4.32E-01	1.00E+02	**4E-03**	**4E-03**	1.60E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	2.00E+00	Y	1.92E+00	1.92E+00	9.77E+01	**2E-02**	**2E-02**	7.12E-01	2.30E-05		**2E-05**
ETHYL ACETATE	141-78-6	7.00E+00	Y	6.71E+00	6.71E+00	7.00E+01	**1E-01**	**1E-01**	2.49E+00	-		**---**
ETHYLBENZENE	100-41-4	1.10E-01	Y	1.05E-01	1.05E-01	1.00E+03	**1E-04**	**1E-04**	3.92E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	7.67E-01	7.67E-01	NA	---	---	2.85E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	2.70E+01	Y	2.59E+01	2.59E+01	2.00E+02	**1E-01**	**1E-01**	9.62E+00	-		**---**
M,P-XYLENE	108-38-3	4.50E-01	Y	4.32E-01	4.32E-01	1.00E+02	**4E-03**	**4E-03**	1.60E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.25E-01	N	3.12E-01	3.12E-01	6.00E+02	**5E-04**	**5E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	2.90E-02	N	2.78E-02	2.78E-02	3.00E+00	**9E-03**	**9E-03**	1.03E-02	3.40E-05		**4E-07**
O-XYLENE	95-47-6	2.10E-01	Y	2.01E-01	2.01E-01	1.00E+02	**2E-03**	**2E-03**	7.48E-02	-		**---**
TETRACHLOROETHENE	127-18-4	5.10E+00	Y	4.89E+00	4.89E+00	4.00E+01	**1E-01**	**1E-01**	1.82E+00	2.60E-07		**5E-07**
TRICHLOROETHENE	79-01-6	1.20E-01	Y	1.15E-01	1.15E-01	2.00E+00	**6E-02**	**6E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-03	N	6.23E-03	6.23E-03	8.00E+01	**8E-05**	**8E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0173H**	**Total Inhalation**	**1E+00**	**1E+00**	**5E-05**
		Based on NDs only	**9E-01**	**9E-01**	**3E-05**
		Based on Detects only	**5E-01**	**5E-01**	**2E-05**
		Site-related only	**2E-01**	**2E-01**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0173H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.25E-01	8.90E-02	5.34E-02	1.34E-01	4.45E-02	1.0E-08		9E-10	5E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.20E-01	3.29E-02	1.97E-02	4.93E-02	1.64E-02	1.0E-06	kidney	3E-08	2E-08	5E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.20E-01	9.86E-03		3.29E-02		3.1E-06	NHL+liver	3E-08		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	6.50E-03	1.78E-03	1.07E-03	2.67E-03	8.90E-04	4.4E-06		8E-09	5E-09	1E-08	4E-09	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0174H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00E-02	N	1.92E-02	1.92E-02	NA	---	---	7.12E-03	5.80E-05		**4E-07**
1,3-BUTADIENE	106-99-0	9.00E-02	N	8.63E-02	8.63E-02	2.00E+00	**4E-02**	**4E-02**	3.21E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	5.50E-01	Y	5.27E-01	5.27E-01	3.00E+01	**2E-02**	**2E-02**	1.96E-01	5.00E-06		**1E-06**
1,1,2-TRICHLOROETHANE	79-00-5	1.85E-02	N	1.77E-02	1.77E-02	2.00E-01	**9E-02**	**9E-02**	6.59E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	5.75E-01	5.75E-01	2.00E+00	**3E-01**	**3E-01**	2.14E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	6.40E-01	Y	6.14E-01	6.14E-01	6.00E+01	**1E-02**	**1E-02**	2.28E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.50E-02	N	6.23E-02	6.23E-02	9.00E+00	**7E-03**	**7E-03**	2.32E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	2.20E+00	Y	2.11E+00	2.11E+00	7.00E+00	**3E-01**	**3E-01**	7.84E-01	2.60E-05		**2E-05**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	2.20E-01	Y	2.11E-01	2.11E-01	6.00E+01	**4E-03**	**4E-03**	7.84E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	1.70E-01	Y	1.63E-01	1.63E-01	8.00E+02	**2E-04**	**2E-04**	6.05E-02	1.10E-05		**7E-07**
BENZENE	71-43-2	9.30E-01	Y	8.92E-01	8.92E-01	3.00E+01	**3E-02**	**3E-02**	3.31E-01	7.80E-06		**3E-06**
BENZYL CHLORIDE	100-44-7	2.25E-01	N	2.16E-01	2.16E-01	1.00E+00	**2E-01**	**2E-01**	8.01E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	1.00E+00	Y	9.59E-01	9.59E-01	NA	---	---	3.56E-01	3.70E-05		**1E-05**
BROMOMETHANE	74-83-9	7.50E-01	N	7.19E-01	7.19E-01	5.00E+00	**1E-01**	**1E-01**	2.67E-01	-		---
CARBON TETRACHLORIDE	56-23-5	7.10E-01	Y	6.81E-01	6.81E-01	1.00E+02	**7E-03**	**7E-03**	2.53E-01	6.00E-06		**2E-06**
CHLOROFORM	67-66-3	4.20E+00	Y	4.03E+00	4.03E+00	9.77E+01	**4E-02**	**4E-02**	1.50E+00	2.30E-05		**3E-05**
ETHYL ACETATE	141-78-6	1.00E+01	Y	9.59E+00	9.59E+00	7.00E+01	**1E-01**	**1E-01**	3.56E+00	-		---
ETHYLBENZENE	100-41-4	2.30E+00	Y	2.21E+00	2.21E+00	1.00E+03	**2E-03**	**2E-03**	8.19E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	7.19E-01	7.19E-01	NA	---	---	2.67E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	1.80E+01	Y	1.73E+01	1.73E+01	2.00E+02	**9E-02**	**9E-02**	6.41E+00	-		---
M,P-XYLENE	108-38-3	8.20E+00	Y	7.86E+00	7.86E+00	1.00E+02	**8E-02**	**8E-02**	2.92E+00	-		---
METHYLENE CHLORIDE	75-09-2	2.20E+00	Y	2.11E+00	2.11E+00	6.00E+02	**4E-03**	**4E-03**	M	1.00E-08	M	**2E-08**
NAPHTHALENE	91-20-3	2.90E-02	N	2.78E-02	2.78E-02	3.00E+00	**9E-03**	**9E-03**	1.03E-02	3.40E-05		**4E-07**
O-XYLENE	95-47-6	2.30E+00	Y	2.21E+00	2.21E+00	1.00E+02	**2E-02**	**2E-02**	8.19E-01	-		---
TETRACHLOROETHENE	127-18-4	1.70E+00	Y	1.63E+00	1.63E+00	4.00E+01	**4E-02**	**4E-02**	6.05E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		---
VINYL CHLORIDE	75-01-4	1.00E-01	Y	9.59E-02	9.59E-02	8.00E+01	**1E-03**	**1E-03**	M	4.40E-06	M	**4E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0174H**	**Total Inhalation**	**2E+00**	**2E+00**	**1E-04**
		Based on NDs only	**8E-01**	**8E-01**	**3E-05**
		Based on Detects only	**8E-01**	**8E-01**	**8E-05**
		Site-related only	**8E-02**	**8E-02**	**2E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0174H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.20E+00	6.03E-01	3.62E-01	9.04E-01	3.01E-01	1.0E-08		6E-09	4E-09	9E-09	3E-09	**2E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	1.00E-01	2.74E-02	1.64E-02	4.11E-02	1.37E-02	4.4E-06		1E-07	7E-08	2E-07	6E-08	**4E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0180H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.65E-02	N	2.54E-02	2.54E-02	NA	---	---	9.44E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	5.50E-02	N	5.27E-02	5.27E-02	2.00E+00	**3E-02**	**3E-02**	1.96E-02	3.00E-05		**6E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	8.63E-02	8.63E-02	3.00E+01	**3E-03**	**3E-03**	3.21E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.30E-02	N	1.25E-02	1.25E-02	2.00E-01	**6E-02**	**6E-02**	4.63E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.50E-01	N	5.27E-01	5.27E-01	2.00E+00	**3E-01**	**3E-01**	1.96E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.00E-02	N	5.75E-02	5.75E-02	6.00E+01	**1E-03**	**1E-03**	2.14E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.70E-02	N	4.51E-02	4.51E-02	9.00E+00	**5E-03**	**5E-03**	1.67E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	7.30E-02	Y	7.00E-02	7.00E-02	7.00E+00	**1E-02**	**1E-02**	2.60E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	1.01E-01	1.01E-01	4.00E+00	**3E-02**	**3E-02**	3.74E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	9.00E-02	N	8.63E-02	8.63E-02	6.00E+01	**1E-03**	**1E-03**	3.21E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.95E-02	N	4.75E-02	4.75E-02	8.00E+02	**6E-05**	**6E-05**	1.76E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	3.70E-01	Y	3.55E-01	3.55E-01	3.00E+01	**1E-02**	**1E-02**	1.32E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	1.15E-01	N	1.10E-01	1.10E-01	1.00E+00	**1E-01**	**1E-01**	4.10E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	1.20E-01	N	1.15E-01	1.15E-01	NA	---	---	4.27E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	6.50E-01	N	6.23E-01	6.23E-01	5.00E+00	**1E-01**	**1E-01**	2.32E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	4.03E-01	4.03E-01	1.00E+02	**4E-03**	**4E-03**	1.50E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	1.30E-01	Y	1.25E-01	1.25E-01	9.77E+01	**1E-03**	**1E-03**	4.63E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	5.60E-02	Y	5.37E-02	5.37E-02	1.00E+03	**5E-05**	**5E-05**	1.99E-02	2.50E-06		**5E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.45E-01	N	4.27E-01	4.27E-01	NA	---	---	1.58E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	1.30E+01	Y	1.25E+01	1.25E+01	2.00E+02	**6E-02**	**6E-02**	4.63E+00	-		**---**
M,P-XYLENE	108-38-3	1.90E-01	Y	1.82E-01	1.82E-01	1.00E+02	**2E-03**	**2E-03**	6.77E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	6.80E-01	Y	6.52E-01	6.52E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	6.10E-02	Y	5.85E-02	5.85E-02	1.00E+02	**6E-04**	**6E-04**	2.17E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.40E-02	Y	4.22E-02	4.22E-02	4.00E+01	**1E-03**	**1E-03**	1.57E-02	2.60E-07		**4E-09**
TRICHLOROETHENE	79-01-6	9.00E-03	N	8.63E-03	8.63E-03	2.00E+00	**4E-03**	**4E-03**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	4.20E-03	N	4.03E-03	4.03E-03	8.00E+01	**5E-05**	**5E-05**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0180H**	**Total Inhalation**	**7E-01**	**7E-01**	**2E-05**
		Based on NDs only	**6E-01**	**6E-01**	**2E-05**
		Based on Detects only	**9E-02**	**9E-02**	**4E-06**
		Site-related only	**8E-03**	**8E-03**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0180H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.80E-01	1.86E-01	1.12E-01	2.79E-01	9.32E-02	1.0E-08		2E-09	1E-09	3E-09	9E-10	**7E-09**
TRICHLOROETHENE	79-01-6	9.00E-03	2.47E-03	1.48E-03	3.70E-03	1.23E-03	1.0E-06	kidney	2E-09	1E-09	4E-09	1E-09	**9E-09**
TRICHLOROETHENE	79-01-6	9.00E-03	7.40E-04		2.47E-03		3.1E-06	NHL+liver	2E-09		8E-09		**1E-08**
VINYL CHLORIDE	75-01-4	4.20E-03	1.15E-03	6.90E-04	1.73E-03	5.75E-04	4.4E-06		5E-09	3E-09	8E-09	3E-09	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0189H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	1.01E-02	1.01E-02	NA	---	---	3.74E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	4.95E-02	N	4.75E-02	4.75E-02	2.00E+00	**2E-02**	**2E-02**	1.76E-02	3.00E-05		**5E-07**
1,4-DIOXANE	123-91-1	7.00E-02	N	6.71E-02	6.71E-02	3.00E+01	**2E-03**	**2E-03**	2.49E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	6.71E-03	6.71E-03	2.00E-01	**3E-02**	**3E-02**	2.49E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.85E-01	N	4.65E-01	4.65E-01	2.00E+00	**2E-01**	**2E-01**	1.73E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.30E-01	Y	1.25E-01	1.25E-01	6.00E+01	**2E-03**	**2E-03**	4.63E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	3.16E-02	3.16E-02	9.00E+00	**4E-03**	**4E-03**	1.18E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	7.40E-02	Y	7.10E-02	7.10E-02	7.00E+00	**1E-02**	**1E-02**	2.64E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	8.63E-02	8.63E-02	4.00E+00	**2E-02**	**2E-02**	3.21E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	5.75E-02	5.75E-02	6.00E+01	**1E-03**	**1E-03**	2.14E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	4.79E-02	4.79E-02	8.00E+02	**6E-05**	**6E-05**	1.78E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	4.10E-01	Y	3.93E-01	3.93E-01	3.00E+01	**1E-02**	**1E-02**	1.46E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	8.15E-02	8.15E-02	1.00E+00	**8E-02**	**8E-02**	3.03E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	1.20E-01	1.20E-01	NA	---	---	4.45E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	6.50E-01	N	6.23E-01	6.23E-01	5.00E+00	**1E-01**	**1E-01**	2.32E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	4.51E-01	4.51E-01	1.00E+02	**5E-03**	**5E-03**	1.67E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	8.40E-01	Y	8.05E-01	8.05E-01	9.77E+01	**8E-03**	**8E-03**	2.99E-01	2.30E-05		**7E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.70E-01	Y	1.63E-01	1.63E-01	1.00E+03	**2E-04**	**2E-04**	6.05E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	6.23E-01	6.23E-01	NA	---	---	2.32E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL	67-63-0	2.40E+02	Y	2.30E+02	2.30E+02	2.00E+02	**1E+00**	**1E+00**	8.55E+01	-		**---**
M,P-XYLENE	108-38-3	4.80E-01	Y	4.60E-01	4.60E-01	1.00E+02	**5E-03**	**5E-03**	1.71E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	2.15E-01	N	2.06E-01	2.06E-01	6.00E+02	**3E-04**	**3E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.70E-01	Y	1.63E-01	1.63E-01	1.00E+02	**2E-03**	**2E-03**	6.05E-02	-		**---**
TETRACHLOROETHENE	127-18-4	2.60E+00	Y	2.49E+00	2.49E+00	4.00E+01	**6E-02**	**6E-02**	9.26E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	1.90E-01	Y	1.82E-01	1.82E-01	2.00E+00	**9E-02**	**9E-02**	M	4.10E-06	M	**4E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	8.00E-03	N	7.67E-03	7.67E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0189H**	**Total Inhalation**	**2E+00**	**2E+00**	**3E-05**
		Based on NDs only	**5E-01**	**5E-01**	**2E-05**
		Based on Detects only	**1E+00**	**1E+00**	**1E-05**
		Site-related only	**2E-01**	**2E-01**	**8E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0189H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.15E-01	5.89E-02	3.53E-02	8.84E-02	2.95E-02	1.0E-08		6E-10	4E-10	9E-10	3E-10	**2E-09**
TRICHLOROETHENE	79-01-6	1.90E-01	5.21E-02	3.12E-02	7.81E-02	2.60E-02	1.0E-06	kidney	5E-08	3E-08	8E-08	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	1.90E-01	1.56E-02		5.21E-02		3.1E-06	NHL+liver	5E-08		2E-07		**2E-07**
VINYL CHLORIDE	75-01-4	8.00E-03	2.19E-03	1.32E-03	3.29E-03	1.10E-03	4.4E-06		1E-08	6E-09	1E-08	5E-09	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0192H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	1.05E-02	1.05E-02	NA	---	---	3.92E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	1.78E-02	3.00E-05		**5E-07**
1,4-DIOXANE	123-91-1	7.50E-02	N	7.19E-02	7.19E-02	3.00E+01	**2E-03**	**2E-03**	2.67E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	7.19E-03	7.19E-03	2.00E-01	**4E-02**	**4E-02**	2.67E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	4.79E-01	4.79E-01	2.00E+00	**2E-01**	**2E-01**	1.78E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.30E-01	Y	1.25E-01	1.25E-01	6.00E+01	**2E-03**	**2E-03**	4.63E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.50E-02	N	3.36E-02	3.36E-02	9.00E+00	**4E-03**	**4E-03**	1.25E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	7.38E-02	7.38E-02	7.00E+00	**1E-02**	**1E-02**	2.74E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	5.75E-02	5.75E-02	6.00E+01	**1E-03**	**1E-03**	2.14E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	5.27E-02	5.27E-02	8.00E+02	**7E-05**	**7E-05**	1.96E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	1.10E+00	Y	1.05E+00	1.05E+00	3.00E+01	**4E-02**	**4E-02**	3.92E-01	7.80E-06		**3E-06**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	8.63E-02	8.63E-02	1.00E+00	**9E-02**	**9E-02**	3.21E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	1.25E-01	1.25E-01	NA	---	---	4.63E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	6.71E-01	6.71E-01	5.00E+00	**1E-01**	**1E-01**	2.49E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	4.51E-01	4.51E-01	1.00E+02	**5E-03**	**5E-03**	1.67E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.30E+00	Y	1.25E+00	1.25E+00	9.77E+01	**1E-02**	**1E-02**	4.63E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.00E-01	Y	1.92E-01	1.92E-01	1.00E+03	**2E-04**	**2E-04**	7.12E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	6.71E-01	6.71E-01	NA	**---**	**---**	2.49E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL	67-63-0	1.20E+01	Y	1.15E+01	1.15E+01	2.00E+02	**6E-02**	**6E-02**	4.27E+00	-		**---**
M,P-XYLENE	108-38-3	6.00E-01	Y	5.75E-01	5.75E-01	1.00E+02	**6E-03**	**6E-03**	2.14E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	2.25E-01	N	2.16E-01	2.16E-01	6.00E+02	**4E-04**	**4E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.20E-01	Y	2.11E-01	2.11E-01	1.00E+02	**2E-03**	**2E-03**	7.84E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.60E+01	Y	1.53E+01	1.53E+01	4.00E+01	**4E-01**	**4E-01**	5.70E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	4.30E-01	Y	4.12E-01	4.12E-01	2.00E+00	**2E-01**	**2E-01**	M	4.10E-06	M	**9E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	8.50E-03	N	8.15E-03	8.15E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**4E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0192H**	**Total Inhalation**	**1E+00**	**1E+00**	**4E-05**
		Based on NDs only	**6E-01**	**6E-01**	**2E-05**
		Based on Detects only	**7E-01**	**7E-01**	**2E-05**
		Site-related only	**6E-01**	**6E-01**	**3E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0192H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.25E-01	6.16E-02	3.70E-02	9.25E-02	3.08E-02	1.0E-08		6E-10	4E-10	9E-10	3E-10	**2E-09**
TRICHLOROETHENE	79-01-6	4.30E-01	1.18E-01	7.07E-02	1.77E-01	5.89E-02	1.0E-06	kidney	1E-07	7E-08	2E-07	6E-08	**4E-07**
TRICHLOROETHENE	79-01-6	4.30E-01	3.53E-02		1.18E-01		3.1E-06	NHL+liver	1E-07		4E-07		**5E-07**
VINYL CHLORIDE	75-01-4	8.50E-03	2.33E-03	1.40E-03	3.49E-03	1.16E-03	4.4E-06		1E-08	6E-09	2E-08	5E-09	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0193H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	6.57E-02	6.57E-02	NA	---	---	2.44E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.12E+00	2.12E+00	2.00E+00	**1E+00**	**1E+00**	7.89E-01	3.00E-05		**2E-05**
1,4-DIOXANE	123-91-1	3.61E-01	N	3.46E-01	3.46E-01	3.00E+01	**1E-02**	**1E-02**	1.28E-01	5.00E-06		**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	7.82E-02	7.82E-02	2.00E-01	**4E-01**	**4E-01**	2.90E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.23E+00	2.23E+00	2.00E+00	**1E+00**	**1E+00**	8.30E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	7.38E-02	7.38E-02	9.00E+00	**8E-03**	**8E-03**	2.74E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.02E-01	Y	9.78E-02	9.78E-02	7.00E+00	**1E-02**	**1E-02**	3.63E-02	2.60E-05		**9E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	6.66E-02	6.66E-02	4.00E+00	**2E-02**	**2E-02**	2.48E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	5.75E-02	5.75E-02	8.00E+02	**7E-05**	**7E-05**	2.14E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	4.89E-01	Y	4.69E-01	4.69E-01	3.00E+01	**2E-02**	**2E-02**	1.74E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	4.99E-01	4.99E-01	1.00E+00	**5E-01**	**5E-01**	1.85E-01	4.90E-05		**9E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	6.42E-01	6.42E-01	NA	---	---	2.39E-01	3.70E-05		**9E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	3.72E-01	3.72E-01	5.00E+00	**7E-02**	**7E-02**	1.38E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.74E-01	Y	5.50E-01	5.50E-01	1.00E+02	**6E-03**	**6E-03**	2.04E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.55E+00	Y	1.49E+00	1.49E+00	9.77E+01	**2E-02**	**2E-02**	5.52E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.86E-01	Y	1.78E-01	1.78E-01	1.00E+03	**2E-04**	**2E-04**	6.62E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	3.23E+00	3.23E+00	NA	---	---	1.20E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL	67-63-0	1.15E+01	Y	1.10E+01	1.10E+01	2.00E+02	**6E-02**	**6E-02**	4.10E+00	-		**---**
M,P-XYLENE	108-38-3	6.76E-01	Y	6.48E-01	6.48E-01	1.00E+02	**6E-03**	**6E-03**	2.41E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	6.74E-01	Y	6.46E-01	6.46E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.58E+00	1.58E+00	3.00E+00	**5E-01**	**5E-01**	5.88E-01	3.40E-05		**2E-05**
O-XYLENE	95-47-6	4.34E-01	N	4.16E-01	4.16E-01	1.00E+02	**4E-03**	**4E-03**	1.54E-01	-		**---**
TETRACHLOROETHENE	127-18-4	3.82E+00	Y	3.66E+00	3.66E+00	4.00E+01	**9E-02**	**9E-02**	1.36E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	7.18E-01	Y	6.88E-01	6.88E-01	2.00E+00	**3E-01**	**3E-01**	M	4.10E-06	M	**2E-06**
VINYL ACETATE	108-05-4	3.52E-02	N	3.38E-02	3.38E-02	2.00E+02	**2E-04**	**2E-04**	1.25E-02	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	2.45E-02	2.45E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0193H**	**Total Inhalation**	**4E+00**	**4E+00**	**1E-04**
		Based on NDs only	**4E+00**	**4E+00**	**1E-04**
		Based on Detects only	**5E-01**	**5E-01**	**2E-05**
		Site-related only	**4E-01**	**4E-01**	**3E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0193H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.74E-01	1.85E-01	1.11E-01	2.77E-01	9.23E-02	1.0E-08		2E-09	1E-09	3E-09	9E-10	**7E-09**
TRICHLOROETHENE	79-01-6	7.18E-01	1.97E-01	1.18E-01	2.95E-01	9.84E-02	1.0E-06	kidney	2E-07	1E-07	3E-07	1E-07	**7E-07**
TRICHLOROETHENE	79-01-6	7.18E-01	5.90E-02		1.97E-01		3.1E-06	NHL+liver	2E-07		6E-07		**8E-07**
VINYL CHLORIDE	75-01-4	2.56E-02	7.00E-03	4.20E-03	1.05E-02	3.50E-03	4.4E-06		3E-08	2E-08	5E-08	2E-08	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0194H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	6.57E-02	6.57E-02	NA	---	---	2.44E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.12E+00	2.12E+00	2.00E+00	**1E+00**	**1E+00**	7.89E-01	3.00E-05		**2E-05**
1,4-DIOXANE	123-91-1	3.61E-01	N	3.46E-01	3.46E-01	3.00E+01	**1E-02**	**1E-02**	1.28E-01	5.00E-06		**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	7.82E-02	7.82E-02	2.00E-01	**4E-01**	**4E-01**	2.90E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.23E+00	2.23E+00	2.00E+00	**1E+00**	**1E+00**	8.30E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	7.38E-02	7.38E-02	9.00E+00	**8E-03**	**8E-03**	2.74E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.22E-01	Y	1.17E-01	1.17E-01	7.00E+00	**2E-02**	**2E-02**	4.35E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	6.66E-02	6.66E-02	4.00E+00	**2E-02**	**2E-02**	2.48E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	5.75E-02	5.75E-02	8.00E+02	**7E-05**	**7E-05**	2.14E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	5.69E-01	Y	5.46E-01	5.46E-01	3.00E+01	**2E-02**	**2E-02**	2.03E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	4.99E-01	4.99E-01	1.00E+00	**5E-01**	**5E-01**	1.85E-01	4.90E-05		**9E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	6.42E-01	6.42E-01	NA	---	---	2.39E-01	3.70E-05		**9E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	3.72E-01	3.72E-01	5.00E+00	**7E-02**	**7E-02**	1.38E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.46E-01	Y	5.24E-01	5.24E-01	1.00E+02	**5E-03**	**5E-03**	1.94E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	7.40E-01	Y	7.10E-01	7.10E-01	9.77E+01	**7E-03**	**7E-03**	2.64E-01	2.30E-05		**6E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	4.23E-01	Y	4.06E-01	4.06E-01	1.00E+03	**4E-04**	**4E-04**	1.51E-01	2.50E-06		**4E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	3.23E+00	3.23E+00	NA	---	---	1.20E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL	67-63-0	9.27E+00	Y	8.89E+00	8.89E+00	2.00E+02	**4E-02**	**4E-02**	3.30E+00	-		**---**
M,P-XYLENE	108-38-3	1.14E+00	Y	1.09E+00	1.09E+00	1.00E+02	**1E-02**	**1E-02**	4.06E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	6.67E-01	Y	6.40E-01	6.40E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.58E+00	1.58E+00	3.00E+00	**5E-01**	**5E-01**	5.88E-01	3.40E-05		**2E-05**
O-XYLENE	95-47-6	4.34E-01	N	4.16E-01	4.16E-01	1.00E+02	**4E-03**	**4E-03**	1.54E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.06E+01	Y	1.02E+01	1.02E+01	4.00E+01	**3E-01**	**3E-01**	3.78E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	7.18E-01	Y	6.88E-01	6.88E-01	2.00E+00	**3E-01**	**3E-01**	M	4.10E-06	M	**2E-06**
VINYL ACETATE	108-05-4	3.52E-02	N	3.38E-02	3.38E-02	2.00E+02	**2E-04**	**2E-04**	1.25E-02	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	2.45E-02	2.45E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0194H**	**Total Inhalation**	**4E+00**	**4E+00**	**1E-04**
		Based on NDs only	**4E+00**	**4E+00**	**1E-04**
		Based on Detects only	**7E-01**	**7E-01**	**1E-05**
		Site-related only	**6E-01**	**6E-01**	**3E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0194H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.67E-01	1.83E-01	1.10E-01	2.74E-01	9.14E-02	1.0E-08		2E-09	1E-09	3E-09	9E-10	**7E-09**
TRICHLOROETHENE	79-01-6	7.18E-01	1.97E-01	1.18E-01	2.95E-01	9.84E-02	1.0E-06	kidney	2E-07	1E-07	3E-07	1E-07	**7E-07**
TRICHLOROETHENE	79-01-6	7.18E-01	5.90E-02		1.97E-01		3.1E-06	NHL+liver	2E-07		6E-07		**8E-07**
VINYL CHLORIDE	75-01-4	2.56E-02	7.00E-03	4.20E-03	1.05E-02	3.50E-03	4.4E-06		3E-08	2E-08	5E-08	2E-08	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0195H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	6.57E-02	6.57E-02	NA	---	---	2.44E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.12E+00	2.12E+00	2.00E+00	**1E+00**	**1E+00**	7.89E-01	3.00E-05		**2E-05**
1,4-DIOXANE	123-91-1	3.61E-01	N	3.46E-01	3.46E-01	3.00E+01	**1E-02**	**1E-02**	1.28E-01	5.00E-06		**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	7.82E-02	7.82E-02	2.00E-01	**4E-01**	**4E-01**	2.90E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.23E+00	2.23E+00	2.00E+00	**1E+00**	**1E+00**	8.30E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.35E+00	Y	5.13E+00	5.13E+00	6.00E+01	**9E-02**	**9E-02**	1.91E+00	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	7.38E-02	7.38E-02	9.00E+00	**8E-03**	**8E-03**	2.74E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.24E-01	Y	1.19E-01	1.19E-01	7.00E+00	**2E-02**	**2E-02**	4.42E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	6.66E-02	6.66E-02	4.00E+00	**2E-02**	**2E-02**	2.48E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	1.59E+00	Y	1.52E+00	1.52E+00	6.00E+01	**3E-02**	**3E-02**	5.66E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	5.75E-02	5.75E-02	8.00E+02	**7E-05**	**7E-05**	2.14E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	6.26E-01	Y	6.00E-01	6.00E-01	3.00E+01	**2E-02**	**2E-02**	2.23E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	4.99E-01	4.99E-01	1.00E+00	**5E-01**	**5E-01**	1.85E-01	4.90E-05		**9E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	6.42E-01	6.42E-01	NA	---	---	2.39E-01	3.70E-05		**9E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	3.72E-01	3.72E-01	5.00E+00	**7E-02**	**7E-02**	1.38E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.96E-01	Y	4.76E-01	4.76E-01	1.00E+02	**5E-03**	**5E-03**	1.77E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	5.55E-01	Y	5.32E-01	5.32E-01	9.77E+01	**5E-03**	**5E-03**	1.98E-01	2.30E-05		**5E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	7.33E-01	Y	7.03E-01	7.03E-01	1.00E+03	**7E-04**	**7E-04**	2.61E-01	2.50E-06		**7E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	3.23E+00	3.23E+00	NA	---	---	1.20E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL	67-63-0	2.05E+01	Y	1.97E+01	1.97E+01	2.00E+02	**1E-01**	**1E-01**	7.30E+00	-		**---**
M,P-XYLENE	108-38-3	2.76E+00	Y	2.65E+00	2.65E+00	1.00E+02	**3E-02**	**3E-02**	9.83E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	5.69E-01	Y	5.46E-01	5.46E-01	6.00E+02	**9E-04**	**9E-04**	M	1.00E-08	M	**6E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.58E+00	1.58E+00	3.00E+00	**5E-01**	**5E-01**	5.88E-01	3.40E-05		**2E-05**
O-XYLENE	95-47-6	1.44E+00	Y	1.38E+00	1.38E+00	1.00E+02	**1E-02**	**1E-02**	5.13E-01	-		**---**
TETRACHLOROETHENE	127-18-4	2.27E+00	Y	2.18E+00	2.18E+00	4.00E+01	**5E-02**	**5E-02**	8.08E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	5.95E-02	Y	5.71E-02	5.71E-02	2.00E+00	**3E-02**	**3E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	3.52E-02	N	3.38E-02	3.38E-02	2.00E+02	**2E-04**	**2E-04**	1.25E-02	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	2.45E-02	2.45E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0195H**	**Total Inhalation**	**4E+00**	**4E+00**	**1E-04**
		Based on NDs only	**4E+00**	**4E+00**	**1E-04**
		Based on Detects only	**4E-01**	**4E-01**	**9E-06**
		Site-related only	**9E-02**	**9E-02**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0195H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.69E-01	1.56E-01	9.35E-02	2.34E-01	7.79E-02	1.0E-08		2E-09	9E-10	2E-09	8E-10	**6E-09**
TRICHLOROETHENE	79-01-6	5.95E-02	1.63E-02	9.78E-03	2.45E-02	8.15E-03	1.0E-06	kidney	2E-08	1E-08	2E-08	8E-09	**6E-08**
TRICHLOROETHENE	79-01-6	5.95E-02	4.89E-03		1.63E-02		3.1E-06	NHL+liver	2E-08		5E-08		**7E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	7.00E-03	4.20E-03	1.05E-02	3.50E-03	4.4E-06		3E-08	2E-08	5E-08	2E-08	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0197H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.50E-02	N	2.40E-02	2.40E-02	NA	---	---	8.90E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	1.78E-02	3.00E-05		**5E-07**
1,4-DIOXANE	123-91-1	8.50E-02	N	8.15E-02	8.15E-02	3.00E+01	**3E-03**	**3E-03**	3.03E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	1.15E-02	1.15E-02	2.00E-01	**6E-02**	**6E-02**	4.27E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	4.79E-01	4.79E-01	2.00E+00	**2E-01**	**2E-01**	1.78E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	2.20E-01	Y	2.11E-01	2.11E-01	6.00E+01	**4E-03**	**4E-03**	7.84E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.45E-02	N	4.27E-02	4.27E-02	9.00E+00	**5E-03**	**5E-03**	1.58E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	8.50E-02	Y	8.15E-02	8.15E-02	7.00E+00	**1E-02**	**1E-02**	3.03E-02	2.60E-05		**8E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	9.59E-02	9.59E-02	4.00E+00	**2E-02**	**2E-02**	3.56E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	8.50E-02	N	8.15E-02	8.15E-02	6.00E+01	**1E-03**	**1E-03**	3.03E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	2.10E-01	Y	2.01E-01	2.01E-01	8.00E+02	**3E-04**	**3E-04**	7.48E-02	1.10E-05		**8E-07**
BENZENE	71-43-2	4.30E-01	Y	4.12E-01	4.12E-01	3.00E+01	**1E-02**	**1E-02**	1.53E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	1.05E-01	1.05E-01	1.00E+00	**1E-01**	**1E-01**	3.92E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	1.05E-01	1.05E-01	NA	---	---	3.92E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	6.00E-01	N	5.75E-01	5.75E-01	5.00E+00	**1E-01**	**1E-01**	2.14E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	4.22E-01	4.22E-01	1.00E+02	**4E-03**	**4E-03**	1.57E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	1.10E+00	Y	1.05E+00	1.05E+00	9.77E+01	**1E-02**	**1E-02**	3.92E-01	2.30E-05		**9E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	3.50E-01	Y	3.36E-01	3.36E-01	1.00E+03	**3E-04**	**3E-04**	1.25E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.25E-01	N	4.08E-01	4.08E-01	NA	---	---	1.51E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	2.90E+01	Y	2.78E+01	2.78E+01	2.00E+02	**1E-01**	**1E-01**	1.03E+01	-		**---**
M,P-XYLENE	108-38-3	1.20E+00	Y	1.15E+00	1.15E+00	1.00E+02	**1E-02**	**1E-02**	4.27E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	4.80E-01	Y	4.60E-01	4.60E-01	6.00E+02	**8E-04**	**8E-04**	M	1.00E-08	M	**5E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	3.10E-01	Y	2.97E-01	2.97E-01	1.00E+02	**3E-03**	**3E-03**	1.10E-01	-		**---**
TETRACHLOROETHENE	127-18-4	2.30E+01	Y	2.21E+01	2.21E+01	4.00E+01	**6E-01**	**6E-01**	8.19E+00	2.60E-07		**2E-06**
TRICHLOROETHENE	79-01-6	5.80E+00	Y	5.56E+00	5.56E+00	2.00E+00	**3E+00**	**3E+00**	M	4.10E-06	M	**1E-05**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	3.95E-03	N	3.79E-03	3.79E-03	8.00E+01	**5E-05**	**5E-05**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0197H**	**Total Inhalation**	**4E+00**	**4E+00**	**4E-05**
		Based on NDs only	**6E-01**	**6E-01**	**2E-05**
		Based on Detects only	**4E+00**	**4E+00**	**3E-05**
		Site-related only	**3E+00**	**3E+00**	**1E-05**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0197H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.80E-01	1.32E-01	7.89E-02	1.97E-01	6.58E-02	1.0E-08		1E-09	8E-10	2E-09	7E-10	**5E-09**
TRICHLOROETHENE	79-01-6	5.80E+00	1.59E+00	9.53E-01	2.38E+00	7.95E-01	1.0E-06	kidney	2E-06	1E-06	2E-06	8E-07	**6E-06**
TRICHLOROETHENE	79-01-6	5.80E+00	4.77E-01		1.59E+00		3.1E-06	NHL+liver	1E-06		5E-06		**6E-06**
VINYL CHLORIDE	75-01-4	3.95E-03	1.08E-03	6.49E-04	1.62E-03	5.41E-04	4.4E-06		5E-09	3E-09	7E-09	2E-09	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0225H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	6.57E-02	6.57E-02	NA	---	---	2.44E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.12E+00	2.12E+00	2.00E+00	**1E+00**	**1E+00**	7.89E-01	3.00E-05		**2E-05**
1,4-DIOXANE	123-91-1	3.61E-01	N	3.46E-01	3.46E-01	3.00E+01	**1E-02**	**1E-02**	1.28E-01	5.00E-06		**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	7.82E-02	7.82E-02	2.00E-01	**4E-01**	**4E-01**	2.90E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.23E+00	2.23E+00	2.00E+00	**1E+00**	**1E+00**	8.30E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	7.38E-02	7.38E-02	9.00E+00	**8E-03**	**8E-03**	2.74E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	3.26E-01	Y	3.13E-01	3.13E-01	7.00E+00	**4E-02**	**4E-02**	1.16E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	6.66E-02	6.66E-02	4.00E+00	**2E-02**	**2E-02**	2.48E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.80E-01	Y	9.40E-01	9.40E-01	8.00E+02	**1E-03**	**1E-03**	3.49E-01	1.10E-05		**4E-06**
BENZENE	71-43-2	5.21E-01	Y	5.00E-01	5.00E-01	3.00E+01	**2E-02**	**2E-02**	1.86E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	4.99E-01	4.99E-01	1.00E+00	**5E-01**	**5E-01**	1.85E-01	4.90E-05		**9E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	6.42E-01	6.42E-01	NA	---	---	2.39E-01	3.70E-05		**9E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	3.72E-01	3.72E-01	5.00E+00	**7E-02**	**7E-02**	1.38E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	6.87E-01	Y	6.59E-01	6.59E-01	1.00E+02	**7E-03**	**7E-03**	2.45E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	3.59E-01	Y	3.44E-01	3.44E-01	9.77E+01	**4E-03**	**4E-03**	1.28E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	6.29E-01	Y	6.03E-01	6.03E-01	1.00E+03	**6E-04**	**6E-04**	2.24E-01	2.50E-06		**6E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	3.23E+00	3.23E+00	NA	---	---	1.20E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL	67-63-0	1.24E+01	Y	1.19E+01	1.19E+01	2.00E+02	**6E-02**	**6E-02**	4.42E+00	-		**---**
M,P-XYLENE	108-38-3	2.17E+00	Y	2.08E+00	2.08E+00	1.00E+02	**2E-02**	**2E-02**	7.73E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	7.43E-01	Y	7.12E-01	7.12E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.58E+00	1.58E+00	3.00E+00	**5E-01**	**5E-01**	5.88E-01	3.40E-05		**2E-05**
O-XYLENE	95-47-6	7.24E-01	Y	6.94E-01	6.94E-01	1.00E+02	**7E-03**	**7E-03**	2.58E-01	-		**---**
TETRACHLOROETHENE	127-18-4	2.57E-01	Y	2.46E-01	2.46E-01	4.00E+01	**6E-03**	**6E-03**	9.15E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	6.54E-02	Y	6.27E-02	6.27E-02	2.00E+00	**3E-02**	**3E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	3.52E-02	N	3.38E-02	3.38E-02	2.00E+02	**2E-04**	**2E-04**	1.25E-02	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	2.45E-02	2.45E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0225H**	**Total Inhalation**	**4E+00**	**4E+00**	**1E-04**
		Based on NDs only	**4E+00**	**4E+00**	**1E-04**
		Based on Detects only	**2E-01**	**2E-01**	**1E-05**
		Site-related only	**5E-02**	**5E-02**	**9E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0225H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.43E-01	2.04E-01	1.22E-01	3.05E-01	1.02E-01	1.0E-08		2E-09	1E-09	3E-09	1E-09	**7E-09**
TRICHLOROETHENE	79-01-6	6.54E-02	1.79E-02	1.08E-02	2.69E-02	8.96E-03	1.0E-06	kidney	2E-08	1E-08	3E-08	9E-09	**6E-08**
TRICHLOROETHENE	79-01-6	6.54E-02	5.38E-03		1.79E-02		3.1E-06	NHL+liver	2E-08		6E-08		**7E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	7.00E-03	4.20E-03	1.05E-02	3.50E-03	4.4E-06		3E-08	2E-08	5E-08	2E-08	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0230H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	1.01E-02	1.01E-02	NA	---	---	3.74E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	4.95E-02	N	4.75E-02	4.75E-02	2.00E+00	**2E-02**	**2E-02**	1.76E-02	3.00E-05		**5E-07**
1,4-DIOXANE	123-91-1	7.00E-02	N	6.71E-02	6.71E-02	3.00E+01	**2E-03**	**2E-03**	2.49E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	6.71E-03	6.71E-03	2.00E-01	**3E-02**	**3E-02**	2.49E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.85E-01	N	4.65E-01	4.65E-01	2.00E+00	**2E-01**	**2E-01**	1.73E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.90E-01	Y	1.82E-01	1.82E-01	6.00E+01	**3E-03**	**3E-03**	6.77E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	3.16E-02	3.16E-02	9.00E+00	**4E-03**	**4E-03**	1.18E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	1.34E-01	1.34E-01	7.00E+00	**2E-02**	**2E-02**	4.99E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	8.63E-02	8.63E-02	4.00E+00	**2E-02**	**2E-02**	3.21E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	5.75E-02	5.75E-02	6.00E+01	**1E-03**	**1E-03**	2.14E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	4.79E-02	4.79E-02	8.00E+02	**6E-05**	**6E-05**	1.78E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	5.30E-01	Y	5.08E-01	5.08E-01	3.00E+01	**2E-02**	**2E-02**	1.89E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	8.15E-02	8.15E-02	1.00E+00	**8E-02**	**8E-02**	3.03E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	1.20E-01	1.20E-01	NA	---	---	4.45E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	6.50E-01	N	6.23E-01	6.23E-01	5.00E+00	**1E-01**	**1E-01**	2.32E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.90E-01	Y	3.74E-01	3.74E-01	1.00E+02	**4E-03**	**4E-03**	1.39E-01	6.00E-06		**8E-07**
CHLOROFORM	67-66-3	9.60E-01	Y	9.21E-01	9.21E-01	9.77E+01	**9E-03**	**9E-03**	3.42E-01	2.30E-05		**8E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.50E-01	Y	1.44E-01	1.44E-01	1.00E+03	**1E-04**	**1E-04**	5.34E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	6.23E-01	6.23E-01	NA	**---**	**---**	2.32E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL	67-63-0	5.50E+01	Y	5.27E+01	5.27E+01	2.00E+02	**3E-01**	**3E-01**	1.96E+01	-		**---**
M,P-XYLENE	108-38-3	5.20E-01	Y	4.99E-01	4.99E-01	1.00E+02	**5E-03**	**5E-03**	1.85E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	2.75E-01	N	2.64E-01	2.64E-01	6.00E+02	**4E-04**	**4E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.00E-01	Y	1.92E-01	1.92E-01	1.00E+02	**2E-03**	**2E-03**	7.12E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.80E-02	Y	4.60E-02	4.60E-02	4.00E+01	**1E-03**	**1E-03**	1.71E-02	2.60E-07		**4E-09**
TRICHLOROETHENE	79-01-6	1.65E-02	N	1.58E-02	1.58E-02	2.00E+00	**8E-03**	**8E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	8.00E-03	N	7.67E-03	7.67E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0230H**	**Total Inhalation**	**9E-01**	**9E-01**	**3E-05**
		Based on NDs only	**5E-01**	**5E-01**	**2E-05**
		Based on Detects only	**3E-01**	**3E-01**	**1E-05**
		Site-related only	**1E-02**	**1E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0230H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.75E-01	7.53E-02	4.52E-02	1.13E-01	3.77E-02	1.0E-08		8E-10	5E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.65E-02	4.52E-03	2.71E-03	6.78E-03	2.26E-03	1.0E-06	kidney	5E-09	3E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.65E-02	1.36E-03		4.52E-03		3.1E-06	NHL+liver	4E-09		1E-08		**2E-08**
VINYL CHLORIDE	75-01-4	8.00E-03	2.19E-03	1.32E-03	3.29E-03	1.10E-03	4.4E-06		1E-08	6E-09	1E-08	5E-09	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0255H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	6.57E-02	6.57E-02	NA	---	---	2.44E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.12E+00	2.12E+00	2.00E+00	**1E+00**	**1E+00**	7.89E-01	3.00E-05		**2E-05**
1,4-DIOXANE	123-91-1	3.61E-01	N	3.46E-01	3.46E-01	3.00E+01	**1E-02**	**1E-02**	1.28E-01	5.00E-06		**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	7.82E-02	7.82E-02	2.00E-01	**4E-01**	**4E-01**	2.90E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.23E+00	2.23E+00	2.00E+00	**1E+00**	**1E+00**	8.30E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	7.38E-02	7.38E-02	9.00E+00	**8E-03**	**8E-03**	2.74E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.41E-01	Y	1.35E-01	1.35E-01	7.00E+00	**2E-02**	**2E-02**	5.02E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	6.66E-02	6.66E-02	4.00E+00	**2E-02**	**2E-02**	2.48E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.77E-02	Y	5.53E-02	5.53E-02	8.00E+02	**7E-05**	**7E-05**	2.06E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	6.71E-01	Y	6.43E-01	6.43E-01	3.00E+01	**2E-02**	**2E-02**	2.39E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	4.99E-01	4.99E-01	1.00E+00	**5E-01**	**5E-01**	1.85E-01	4.90E-05		**9E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	6.42E-01	6.42E-01	NA	---	---	2.39E-01	3.70E-05		**9E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	3.72E-01	3.72E-01	5.00E+00	**7E-02**	**7E-02**	1.38E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.87E-01	Y	4.67E-01	4.67E-01	1.00E+02	**5E-03**	**5E-03**	1.73E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.47E+00	Y	1.41E+00	1.41E+00	9.77E+01	**1E-02**	**1E-02**	5.24E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.02E-01	Y	1.94E-01	1.94E-01	1.00E+03	**2E-04**	**2E-04**	7.19E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	3.23E+00	3.23E+00	NA	---	---	1.20E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL	67-63-0	2.15E+00	Y	2.06E+00	2.06E+00	2.00E+02	**1E-02**	**1E-02**	7.66E-01	-		**---**
M,P-XYLENE	108-38-3	8.65E-01	N	8.29E-01	8.29E-01	1.00E+02	**8E-03**	**8E-03**	3.08E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	8.82E-01	Y	8.46E-01	8.46E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**9E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.58E+00	1.58E+00	3.00E+00	**5E-01**	**5E-01**	5.88E-01	3.40E-05		**2E-05**
O-XYLENE	95-47-6	4.34E-01	N	4.16E-01	4.16E-01	1.00E+02	**4E-03**	**4E-03**	1.54E-01	-		**---**
TETRACHLOROETHENE	127-18-4	2.69E+00	Y	2.58E+00	2.58E+00	4.00E+01	**6E-02**	**6E-02**	9.58E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	1.91E-01	Y	1.83E-01	1.83E-01	2.00E+00	**9E-02**	**9E-02**	M	4.10E-06	M	**4E-07**
VINYL ACETATE	108-05-4	3.52E-02	N	3.38E-02	3.38E-02	2.00E+02	**2E-04**	**2E-04**	1.25E-02	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	2.45E-02	2.45E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0255H**	**Total Inhalation**	**4E+00**	**4E+00**	**1E-04**
		Based on NDs only	**4E+00**	**4E+00**	**1E-04**
		Based on Detects only	**2E-01**	**2E-01**	**2E-05**
		Site-related only	**2E-01**	**2E-01**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0255H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.82E-01	2.42E-01	1.45E-01	3.62E-01	1.21E-01	1.0E-08		2E-09	1E-09	4E-09	1E-09	**9E-09**
TRICHLOROETHENE	79-01-6	1.91E-01	5.23E-02	3.14E-02	7.85E-02	2.62E-02	1.0E-06	kidney	5E-08	3E-08	8E-08	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	1.91E-01	1.57E-02		5.23E-02		3.1E-06	NHL+liver	5E-08		2E-07		**2E-07**
VINYL CHLORIDE	75-01-4	2.56E-02	7.00E-03	4.20E-03	1.05E-02	3.50E-03	4.4E-06		3E-08	2E-08	5E-08	2E-08	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0256H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	6.57E-02	6.57E-02	NA	---	---	2.44E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.12E+00	2.12E+00	2.00E+00	**1E+00**	**1E+00**	7.89E-01	3.00E-05		**2E-05**
1,4-DIOXANE	123-91-1	3.61E-01	N	3.46E-01	3.46E-01	3.00E+01	**1E-02**	**1E-02**	1.28E-01	5.00E-06		**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	7.82E-02	7.82E-02	2.00E-01	**4E-01**	**4E-01**	2.90E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.23E+00	2.23E+00	2.00E+00	**1E+00**	**1E+00**	8.30E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	7.38E-02	7.38E-02	9.00E+00	**8E-03**	**8E-03**	2.74E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.04E-01	Y	9.97E-02	9.97E-02	7.00E+00	**1E-02**	**1E-02**	3.70E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	6.66E-02	6.66E-02	4.00E+00	**2E-02**	**2E-02**	2.48E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.91E-02	Y	6.63E-02	6.63E-02	8.00E+02	**8E-05**	**8E-05**	2.46E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	5.72E-01	Y	5.48E-01	5.48E-01	3.00E+01	**2E-02**	**2E-02**	2.04E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	4.99E-01	4.99E-01	1.00E+00	**5E-01**	**5E-01**	1.85E-01	4.90E-05		**9E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	6.42E-01	6.42E-01	NA	---	---	2.39E-01	3.70E-05		**9E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	3.72E-01	3.72E-01	5.00E+00	**7E-02**	**7E-02**	1.38E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.86E-01	Y	4.66E-01	4.66E-01	1.00E+02	**5E-03**	**5E-03**	1.73E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	3.49E-01	Y	3.35E-01	3.35E-01	9.77E+01	**3E-03**	**3E-03**	1.24E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.68E-01	Y	1.61E-01	1.61E-01	1.00E+03	**2E-04**	**2E-04**	5.98E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	3.23E+00	3.23E+00	NA	---	---	1.20E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL	67-63-0	2.07E+00	Y	1.98E+00	1.98E+00	2.00E+02	**1E-02**	**1E-02**	7.37E-01	-		**---**
M,P-XYLENE	108-38-3	6.85E-01	Y	6.57E-01	6.57E-01	1.00E+02	**7E-03**	**7E-03**	2.44E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	6.77E-01	Y	6.49E-01	6.49E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.58E+00	1.58E+00	3.00E+00	**5E-01**	**5E-01**	5.88E-01	3.40E-05		**2E-05**
O-XYLENE	95-47-6	4.34E-01	N	4.16E-01	4.16E-01	1.00E+02	**4E-03**	**4E-03**	1.54E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.84E-01	Y	1.76E-01	1.76E-01	4.00E+01	**4E-03**	**4E-03**	6.55E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	6.16E-02	Y	5.91E-02	5.91E-02	2.00E+00	**3E-02**	**3E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	3.52E-02	N	3.38E-02	3.38E-02	2.00E+02	**2E-04**	**2E-04**	1.25E-02	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	2.45E-02	2.45E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0256H**	**Total Inhalation**	**4E+00**	**4E+00**	**1E-04**
		Based on NDs only	**4E+00**	**4E+00**	**1E-04**
		Based on Detects only	**9E-02**	**9E-02**	**7E-06**
		Site-related only	**5E-02**	**5E-02**	**9E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0256H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.77E-01	1.85E-01	1.11E-01	2.78E-01	9.27E-02	1.0E-08		2E-09	1E-09	3E-09	9E-10	**7E-09**
TRICHLOROETHENE	79-01-6	6.16E-02	1.69E-02	1.01E-02	2.53E-02	8.44E-03	1.0E-06	kidney	2E-08	1E-08	3E-08	8E-09	**6E-08**
TRICHLOROETHENE	79-01-6	6.16E-02	5.06E-03		1.69E-02		3.1E-06	NHL+liver	2E-08		5E-08		**7E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	7.00E-03	4.20E-03	1.05E-02	3.50E-03	4.4E-06		3E-08	2E-08	5E-08	2E-08	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0263H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	6.57E-02	6.57E-02	NA	---	---	2.44E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	2.22E+01	N	2.12E+01	2.12E+01	2.00E+00	**1E+01**	**1E+01**	7.89E+00	3.00E-05		**2E-04**
1,4-DIOXANE	123-91-1	3.61E-01	N	3.46E-01	3.46E-01	3.00E+01	**1E-02**	**1E-02**	1.28E-01	5.00E-06		**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	7.82E-02	7.82E-02	2.00E-01	**4E-01**	**4E-01**	2.90E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.23E+00	2.23E+00	2.00E+00	**1E+00**	**1E+00**	8.30E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.53E-01	Y	6.26E-01	6.26E-01	6.00E+01	**1E-02**	**1E-02**	2.33E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	7.38E-02	7.38E-02	9.00E+00	**8E-03**	**8E-03**	2.74E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	2.88E-01	Y	2.76E-01	2.76E-01	7.00E+00	**4E-02**	**4E-02**	1.03E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	6.66E-02	6.66E-02	4.00E+00	**2E-02**	**2E-02**	2.48E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.13E-02	Y	5.88E-02	5.88E-02	8.00E+02	**7E-05**	**7E-05**	2.18E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	1.24E+00	Y	1.19E+00	1.19E+00	3.00E+01	**4E-02**	**4E-02**	4.42E-01	7.80E-06		**3E-06**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	4.99E-01	4.99E-01	1.00E+00	**5E-01**	**5E-01**	1.85E-01	4.90E-05		**9E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	6.42E-01	6.42E-01	NA	---	---	2.39E-01	3.70E-05		**9E-06**
BROMOMETHANE	74-83-9	3.88E+00	N	3.72E+00	3.72E+00	5.00E+00	**7E-01**	**7E-01**	1.38E+00	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.94E-01	Y	5.70E-01	5.70E-01	1.00E+02	**6E-03**	**6E-03**	2.12E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	4.87E-02	N	4.67E-02	4.67E-02	9.77E+01	**5E-04**	**5E-04**	1.73E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	6.63E-01	Y	6.36E-01	6.36E-01	1.00E+03	**6E-04**	**6E-04**	2.36E-01	2.50E-06		**6E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	3.23E+00	3.23E+00	NA	---	---	1.20E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL	67-63-0	1.54E+01	N	1.47E+01	1.47E+01	2.00E+02	**7E-02**	**7E-02**	5.47E+00	-		**---**
M,P-XYLENE	108-38-3	1.63E+00	Y	1.56E+00	1.56E+00	1.00E+02	**2E-02**	**2E-02**	5.81E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.47E+00	N	3.33E+00	3.33E+00	6.00E+02	**6E-03**	**6E-03**	M	1.00E-08	M	**3E-08**
NAPHTHALENE	91-20-3	1.65E+00	N	1.58E+00	1.58E+00	3.00E+00	**5E-01**	**5E-01**	5.88E-01	3.40E-05		**2E-05**
O-XYLENE	95-47-6	6.16E-01	Y	5.91E-01	5.91E-01	1.00E+02	**6E-03**	**6E-03**	2.19E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.26E+01	Y	1.21E+01	1.21E+01	4.00E+01	**3E-01**	**3E-01**	4.49E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	5.79E-01	Y	5.55E-01	5.55E-01	2.00E+00	**3E-01**	**3E-01**	M	4.10E-06	M	**1E-06**
VINYL ACETATE	108-05-4	3.52E-02	N	3.38E-02	3.38E-02	2.00E+02	**2E-04**	**2E-04**	1.25E-02	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	2.45E-02	2.45E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0263H**	**Total Inhalation**	**1E+01**	**1E+01**	**3E-04**
		Based on NDs only	**1E+01**	**1E+01**	**3E-04**
		Based on Detects only	**7E-01**	**7E-01**	**1E-05**
		Site-related only	**6E-01**	**6E-01**	**3E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0263H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.47E+00	9.51E-01	5.70E-01	1.43E+00	4.75E-01	1.0E-08		1E-08	6E-09	1E-08	5E-09	**3E-08**
TRICHLOROETHENE	79-01-6	5.79E-01	1.59E-01	9.52E-02	2.38E-01	7.93E-02	1.0E-06	kidney	2E-07	1E-07	2E-07	8E-08	**6E-07**
TRICHLOROETHENE	79-01-6	5.79E-01	4.76E-02		1.59E-01		3.1E-06	NHL+liver	1E-07		5E-07		**6E-07**
VINYL CHLORIDE	75-01-4	2.56E-02	7.00E-03	4.20E-03	1.05E-02	3.50E-03	4.4E-06		3E-08	2E-08	5E-08	2E-08	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0273H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.15E-02	N	1.10E-02	1.10E-02	NA	---	---	4.10E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	5.50E-02	N	5.27E-02	5.27E-02	2.00E+00	**3E-02**	**3E-02**	1.96E-02	3.00E-05		**6E-07**
1,4-DIOXANE	123-91-1	7.50E-02	N	7.19E-02	7.19E-02	3.00E+01	**2E-03**	**2E-03**	2.67E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	7.19E-03	7.19E-03	2.00E-01	**4E-02**	**4E-02**	2.67E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	4.79E-01	4.79E-01	2.00E+00	**2E-01**	**2E-01**	1.78E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.90E-01	Y	5.66E-01	5.66E-01	6.00E+01	**9E-03**	**9E-03**	2.10E-01	-		---
1,2-DIBROMOETHANE	106-93-4	3.55E-02	N	3.40E-02	3.40E-02	9.00E+00	**4E-03**	**4E-03**	1.26E-02	6.00E-04		**8E-06**
1,2-DICHLOROETHANE	107-06-2	1.60E-01	Y	1.53E-01	1.53E-01	7.00E+00	**2E-02**	**2E-02**	5.70E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	9.59E-02	9.59E-02	4.00E+00	**2E-02**	**2E-02**	3.56E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	2.10E-01	Y	2.01E-01	2.01E-01	6.00E+01	**3E-03**	**3E-03**	7.48E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	5.27E-02	5.27E-02	8.00E+02	**7E-05**	**7E-05**	1.96E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	4.50E-01	Y	4.32E-01	4.32E-01	3.00E+01	**1E-02**	**1E-02**	1.60E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	8.63E-02	8.63E-02	1.00E+00	**9E-02**	**9E-02**	3.21E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	1.35E-01	N	1.29E-01	1.29E-01	NA	---	---	4.81E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	6.71E-01	6.71E-01	5.00E+00	**1E-01**	**1E-01**	2.49E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	3.84E-01	3.84E-01	1.00E+02	**4E-03**	**4E-03**	1.42E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	5.30E-01	Y	5.08E-01	5.08E-01	9.77E+01	**5E-03**	**5E-03**	1.89E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.50E-01	Y	1.44E-01	1.44E-01	1.00E+03	**1E-04**	**1E-04**	5.34E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	6.71E-01	6.71E-01	NA	---	---	2.49E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL	67-63-0	2.30E+01	Y	2.21E+01	2.21E+01	2.00E+02	**1E-01**	**1E-01**	8.19E+00	-		---
M,P-XYLENE	108-38-3	5.10E-01	Y	4.89E-01	4.89E-01	1.00E+02	**5E-03**	**5E-03**	1.82E-01	-		---
METHYLENE CHLORIDE	75-09-2	2.30E-01	N	2.21E-01	2.21E-01	6.00E+02	**4E-04**	**4E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.70E-01	Y	1.63E-01	1.63E-01	1.00E+02	**2E-03**	**2E-03**	6.05E-02	-		---
TETRACHLOROETHENE	127-18-4	2.70E+00	Y	2.59E+00	2.59E+00	4.00E+01	**6E-02**	**6E-02**	9.62E-01	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	1.75E-02	N	1.68E-02	1.68E-02	2.00E+00	**8E-03**	**8E-03**	M	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.50E-03	N	8.15E-03	8.15E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**4E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0273H**	**Total Inhalation**	**8E-01**	**8E-01**	**3E-05**
		Based on NDs only	**6E-01**	**6E-01**	**2E-05**
		Based on Detects only	**2E-01**	**2E-01**	**8E-06**
		Site-related only	**8E-02**	**8E-02**	**5E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0273H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.30E-01	6.30E-02	3.78E-02	9.45E-02	3.15E-02	1.0E-08		6E-10	4E-10	9E-10	3E-10	**2E-09**
TRICHLOROETHENE	79-01-6	1.75E-02	4.79E-03	2.88E-03	7.19E-03	2.40E-03	1.0E-06	kidney	5E-09	3E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.75E-02	1.44E-03		4.79E-03		3.1E-06	NHL+liver	4E-09		1E-08		**2E-08**
VINYL CHLORIDE	75-01-4	8.50E-03	2.33E-03	1.40E-03	3.49E-03	1.16E-03	4.4E-06		1E-08	6E-09	2E-08	5E-09	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0274H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-02	N	2.30E-02	2.30E-02	NA	---	---	8.55E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	4.90E-02	N	4.70E-02	4.70E-02	2.00E+00	**2E-02**	**2E-02**	1.75E-02	3.00E-05		**5E-07**
1,4-DIOXANE	123-91-1	8.00E-02	N	7.67E-02	7.67E-02	3.00E+01	**3E-03**	**3E-03**	2.85E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	1.15E-02	1.15E-02	2.00E-01	**6E-02**	**6E-02**	4.27E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.95E-01	N	4.75E-01	4.75E-01	2.00E+00	**2E-01**	**2E-01**	1.76E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E-01	Y	1.53E-01	1.53E-01	6.00E+01	**3E-03**	**3E-03**	5.70E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.30E-02	N	4.12E-02	4.12E-02	9.00E+00	**5E-03**	**5E-03**	1.53E-02	6.00E-04		**9E-06**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	1.34E-01	1.34E-01	7.00E+00	**2E-02**	**2E-02**	4.99E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	8.00E-02	N	7.67E-02	7.67E-02	6.00E+01	**1E-03**	**1E-03**	2.85E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.55E-02	N	4.36E-02	4.36E-02	8.00E+02	**5E-05**	**5E-05**	1.62E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	3.60E-01	Y	3.45E-01	3.45E-01	3.00E+01	**1E-02**	**1E-02**	1.28E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	1.01E-01	1.01E-01	1.00E+00	**1E-01**	**1E-01**	3.74E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	1.05E-01	1.05E-01	NA	---	---	3.92E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	6.00E-01	N	5.75E-01	5.75E-01	5.00E+00	**1E-01**	**1E-01**	2.14E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	3.93E-01	3.93E-01	1.00E+02	**4E-03**	**4E-03**	1.46E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	5.10E-01	Y	4.89E-01	4.89E-01	9.77E+01	**5E-03**	**5E-03**	1.82E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.60E+00	Y	1.53E+00	1.53E+00	1.00E+03	**2E-03**	**2E-03**	5.70E-01	2.50E-06		**1E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.10E-01	N	3.93E-01	3.93E-01	NA	---	---	1.46E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	4.40E+01	Y	4.22E+01	4.22E+01	2.00E+02	**2E-01**	**2E-01**	1.57E+01	-		**---**
M,P-XYLENE	108-38-3	6.20E+00	Y	5.95E+00	5.95E+00	1.00E+02	**6E-02**	**6E-02**	2.21E+00	-		**---**
METHYLENE CHLORIDE	75-09-2	6.20E-01	Y	5.95E-01	5.95E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**6E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.40E+00	Y	1.34E+00	1.34E+00	1.00E+02	**1E-02**	**1E-02**	4.99E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.20E+01	Y	1.15E+01	1.15E+01	4.00E+01	**3E-01**	**3E-01**	4.27E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	3.50E-02	Y	3.36E-02	3.36E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**7E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	3.80E-03	N	3.64E-03	3.64E-03	8.00E+01	**5E-05**	**5E-05**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0274H**	**Total Inhalation**	**1E+00**	**1E+00**	**3E-05**
		Based on NDs only	**6E-01**	**6E-01**	**2E-05**
		Based on Detects only	**6E-01**	**6E-01**	**1E-05**
		Site-related only	**3E-01**	**3E-01**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0274H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.20E-01	1.70E-01	1.02E-01	2.55E-01	8.49E-02	1.0E-08		2E-09	1E-09	3E-09	8E-10	**6E-09**
TRICHLOROETHENE	79-01-6	3.50E-02	9.59E-03	5.75E-03	1.44E-02	4.79E-03	1.0E-06	kidney	1E-08	6E-09	1E-08	5E-09	**3E-08**
TRICHLOROETHENE	79-01-6	3.50E-02	2.88E-03		9.59E-03		3.1E-06	NHL+liver	9E-09		3E-08		**4E-08**
VINYL CHLORIDE	75-01-4	3.80E-03	1.04E-03	6.25E-04	1.56E-03	5.21E-04	4.4E-06		5E-09	3E-09	7E-09	2E-09	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0277H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.15E-02	N	1.10E-02	1.10E-02	NA	---	---	4.10E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	1.78E-02	3.00E-05		**5E-07**
1,4-DIOXANE	123-91-1	7.50E-02	N	7.19E-02	7.19E-02	3.00E+01	**2E-03**	**2E-03**	2.67E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	7.19E-03	7.19E-03	2.00E-01	**4E-02**	**4E-02**	2.67E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	4.79E-01	4.79E-01	2.00E+00	**2E-01**	**2E-01**	1.78E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E-01	Y	1.15E-01	1.15E-01	6.00E+01	**2E-03**	**2E-03**	4.27E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.50E-02	N	3.36E-02	3.36E-02	9.00E+00	**4E-03**	**4E-03**	1.25E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	2.60E-01	Y	2.49E-01	2.49E-01	7.00E+00	**4E-02**	**4E-02**	9.26E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	9.59E-02	9.59E-02	4.00E+00	**2E-02**	**2E-02**	3.56E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	6.50E-02	N	6.23E-02	6.23E-02	6.00E+01	**1E-03**	**1E-03**	2.32E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	5.27E-02	5.27E-02	8.00E+02	**7E-05**	**7E-05**	1.96E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	4.00E-01	Y	3.84E-01	3.84E-01	3.00E+01	**1E-02**	**1E-02**	1.42E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	8.63E-02	8.63E-02	1.00E+00	**9E-02**	**9E-02**	3.21E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	1.35E-01	N	1.29E-01	1.29E-01	NA	---	---	4.81E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	6.71E-01	6.71E-01	5.00E+00	**1E-01**	**1E-01**	2.49E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	3.84E-01	3.84E-01	1.00E+02	**4E-03**	**4E-03**	1.42E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	4.90E-01	Y	4.70E-01	4.70E-01	9.77E+01	**5E-03**	**5E-03**	1.75E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.40E-01	Y	2.30E-01	2.30E-01	1.00E+03	**2E-04**	**2E-04**	8.55E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	6.71E-01	6.71E-01	NA	---	---	2.49E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL	67-63-0	8.00E+00	Y	7.67E+00	7.67E+00	2.00E+02	**4E-02**	**4E-02**	2.85E+00	-		**---**
M,P-XYLENE	108-38-3	9.00E-01	Y	8.63E-01	8.63E-01	1.00E+02	**9E-03**	**9E-03**	3.21E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.40E+00	Y	3.26E+00	3.26E+00	6.00E+02	**5E-03**	**5E-03**	M	1.00E-08	M	**3E-08**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.60E-01	Y	2.49E-01	2.49E-01	1.00E+02	**2E-03**	**2E-03**	9.26E-02	-		**---**
TETRACHLOROETHENE	127-18-4	5.00E+00	Y	4.79E+00	4.79E+00	4.00E+01	**1E-01**	**1E-01**	1.78E+00	2.60E-07		**5E-07**
TRICHLOROETHENE	79-01-6	1.75E-02	N	1.68E-02	1.68E-02	2.00E+00	**8E-03**	**8E-03**	M	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	8.50E-03	N	8.15E-03	8.15E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**4E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0277H**	**Total Inhalation**	**8E-01**	**8E-01**	**3E-05**
		Based on NDs only	**6E-01**	**6E-01**	**2E-05**
		Based on Detects only	**2E-01**	**2E-01**	**9E-06**
		Site-related only	**1E-01**	**1E-01**	**7E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0277H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.40E+00	9.32E-01	5.59E-01	1.40E+00	4.66E-01	1.0E-08		9E-09	6E-09	1E-08	5E-09	**3E-08**
TRICHLOROETHENE	79-01-6	1.75E-02	4.79E-03	2.88E-03	7.19E-03	2.40E-03	1.0E-06	kidney	5E-09	3E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.75E-02	1.44E-03		4.79E-03		3.1E-06	NHL+liver	4E-09		1E-08		**2E-08**
VINYL CHLORIDE	75-01-4	8.50E-03	2.33E-03	1.40E-03	3.49E-03	1.16E-03	4.4E-06		1E-08	6E-09	2E-08	5E-09	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0302H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00E-02	N	9.59E-03	9.59E-03	NA	---	---	3.56E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	4.65E-02	N	4.46E-02	4.46E-02	2.00E+00	**2E-02**	**2E-02**	1.66E-02	3.00E-05		**5E-07**
1,4-DIOXANE	123-91-1	7.00E-02	N	6.71E-02	6.71E-02	3.00E+01	**2E-03**	**2E-03**	2.49E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	6.50E-03	N	6.23E-03	6.23E-03	2.00E-01	**3E-02**	**3E-02**	2.32E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.55E-01	N	4.36E-01	4.36E-01	2.00E+00	**2E-01**	**2E-01**	1.62E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E-01	Y	1.53E-01	1.53E-01	6.00E+01	**3E-03**	**3E-03**	5.70E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.10E-02	N	2.97E-02	2.97E-02	9.00E+00	**3E-03**	**3E-03**	1.10E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	9.80E-02	Y	9.40E-02	9.40E-02	7.00E+00	**1E-02**	**1E-02**	3.49E-02	2.60E-05		**9E-07**
1,2-DICHLOROPROPANE	78-87-5	8.50E-02	N	8.15E-02	8.15E-02	4.00E+00	**2E-02**	**2E-02**	3.03E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	5.50E-02	N	5.27E-02	5.27E-02	6.00E+01	**9E-04**	**9E-04**	1.96E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.90E-02	N	4.70E-02	4.70E-02	8.00E+02	**6E-05**	**6E-05**	1.75E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	4.80E-01	Y	4.60E-01	4.60E-01	3.00E+01	**2E-02**	**2E-02**	1.71E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	8.00E-02	N	7.67E-02	7.67E-02	1.00E+00	**8E-02**	**8E-02**	2.85E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.20E-01	N	1.15E-01	1.15E-01	NA	---	---	4.27E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	6.00E-01	N	5.75E-01	5.75E-01	5.00E+00	**1E-01**	**1E-01**	2.14E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.90E-01	Y	3.74E-01	3.74E-01	1.00E+02	**4E-03**	**4E-03**	1.39E-01	6.00E-06		**8E-07**
CHLOROFORM	67-66-3	3.70E-01	Y	3.55E-01	3.55E-01	9.77E+01	**4E-03**	**4E-03**	1.32E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.30E-01	Y	1.25E-01	1.25E-01	1.00E+03	**1E-04**	**1E-04**	4.63E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.00E-01	N	5.75E-01	5.75E-01	NA	**---**	**---**	2.14E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL	67-63-0	1.50E+01	Y	1.44E+01	1.44E+01	2.00E+02	**7E-02**	**7E-02**	5.34E+00	-		**---**
M,P-XYLENE	108-38-3	5.40E-01	Y	5.18E-01	5.18E-01	1.00E+02	**5E-03**	**5E-03**	1.92E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	2.50E-01	N	2.40E-01	2.40E-01	6.00E+02	**4E-04**	**4E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.70E-01	Y	2.59E-01	2.59E-01	1.00E+02	**3E-03**	**3E-03**	9.62E-02	-		**---**
TETRACHLOROETHENE	127-18-4	3.40E-01	Y	3.26E-01	3.26E-01	4.00E+01	**8E-03**	**8E-03**	1.21E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	1.55E-02	N	1.49E-02	1.49E-02	2.00E+00	**7E-03**	**7E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	7.50E-03	N	7.19E-03	7.19E-03	8.00E+01	**9E-05**	**9E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0302H**	**Total Inhalation**	**6E-01**	**6E-01**	**2E-05**
		Based on NDs only	**5E-01**	**5E-01**	**2E-05**
		Based on Detects only	**1E-01**	**1E-01**	**6E-06**
		Site-related only	**2E-02**	**2E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0302H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-08		7E-10	4E-10	1E-09	3E-10	**2E-09**
TRICHLOROETHENE	79-01-6	1.55E-02	4.25E-03	2.55E-03	6.37E-03	2.12E-03	1.0E-06	kidney	4E-09	3E-09	6E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.55E-02	1.27E-03		4.25E-03		3.1E-06	NHL+liver	4E-09		1E-08		**2E-08**
VINYL CHLORIDE	75-01-4	7.50E-03	2.05E-03	1.23E-03	3.08E-03	1.03E-03	4.4E-06		9E-09	5E-09	1E-08	5E-09	**3E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0315H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	1.05E-02	1.05E-02	NA	---	---	3.92E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	1.78E-02	3.00E-05		**5E-07**
1,4-DIOXANE	123-91-1	7.50E-02	N	7.19E-02	7.19E-02	3.00E+01	**2E-03**	**2E-03**	2.67E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	6.71E-03	6.71E-03	2.00E-01	**3E-02**	**3E-02**	2.49E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	4.79E-01	4.79E-01	2.00E+00	**2E-01**	**2E-01**	1.78E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.50E-02	N	5.27E-02	5.27E-02	6.00E+01	**9E-04**	**9E-04**	1.96E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.45E-02	N	3.31E-02	3.31E-02	9.00E+00	**4E-03**	**4E-03**	1.23E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	1.30E-01	Y	1.25E-01	1.25E-01	7.00E+00	**2E-02**	**2E-02**	4.63E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	5.75E-02	5.75E-02	6.00E+01	**1E-03**	**1E-03**	2.14E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	5.27E-02	5.27E-02	8.00E+02	**7E-05**	**7E-05**	1.96E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	4.30E-01	Y	4.12E-01	4.12E-01	3.00E+01	**1E-02**	**1E-02**	1.53E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	8.63E-02	8.63E-02	1.00E+00	**9E-02**	**9E-02**	3.21E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	1.25E-01	1.25E-01	NA	---	---	4.63E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	6.71E-01	6.71E-01	5.00E+00	**1E-01**	**1E-01**	2.49E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	3.84E-01	3.84E-01	1.00E+02	**4E-03**	**4E-03**	1.42E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	3.90E-01	Y	3.74E-01	3.74E-01	9.77E+01	**4E-03**	**4E-03**	1.39E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.40E-01	Y	1.34E-01	1.34E-01	1.00E+03	**1E-04**	**1E-04**	4.99E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	6.71E-01	6.71E-01	NA	**---**	**---**	2.49E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL	67-63-0	1.70E+01	Y	1.63E+01	1.63E+01	2.00E+02	**8E-02**	**8E-02**	6.05E+00	-		**---**
M,P-XYLENE	108-38-3	4.40E-01	Y	4.22E-01	4.22E-01	1.00E+02	**4E-03**	**4E-03**	1.57E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	2.60E-01	N	2.49E-01	2.49E-01	6.00E+02	**4E-04**	**4E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.40E-01	Y	1.34E-01	1.34E-01	1.00E+02	**1E-03**	**1E-03**	4.99E-02	-		**---**
TETRACHLOROETHENE	127-18-4	2.30E+00	Y	2.21E+00	2.21E+00	4.00E+01	**6E-02**	**6E-02**	8.19E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	2.78E-01	2.78E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**6E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	8.50E-03	N	8.15E-03	8.15E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**4E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0315H**	**Total Inhalation**	**9E-01**	**9E-01**	**2E-05**
		Based on NDs only	**5E-01**	**5E-01**	**2E-05**
		Based on Detects only	**3E-01**	**3E-01**	**7E-06**
		Site-related only	**2E-01**	**2E-01**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0315H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.60E-01	7.12E-02	4.27E-02	1.07E-01	3.56E-02	1.0E-08		7E-10	4E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.90E-01	7.95E-02	4.77E-02	1.19E-01	3.97E-02	1.0E-06	kidney	8E-08	5E-08	1E-07	4E-08	**3E-07**
TRICHLOROETHENE	79-01-6	2.90E-01	2.38E-02		7.95E-02		3.1E-06	NHL+liver	7E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	8.50E-03	2.33E-03	1.40E-03	3.49E-03	1.16E-03	4.4E-06		1E-08	6E-09	2E-08	5E-09	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0329H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-02	N	2.30E-02	2.30E-02	NA	---	---	8.55E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	4.90E-02	N	4.70E-02	4.70E-02	2.00E+00	**2E-02**	**2E-02**	1.75E-02	3.00E-05		**5E-07**
1,4-DIOXANE	123-91-1	8.00E-02	N	7.67E-02	7.67E-02	3.00E+01	**3E-03**	**3E-03**	2.85E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	1.15E-02	1.15E-02	2.00E-01	**6E-02**	**6E-02**	4.27E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.95E-01	N	4.75E-01	4.75E-01	2.00E+00	**2E-01**	**2E-01**	1.76E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	3.40E-01	Y	3.26E-01	3.26E-01	6.00E+01	**5E-03**	**5E-03**	1.21E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.30E-02	N	4.12E-02	4.12E-02	9.00E+00	**5E-03**	**5E-03**	1.53E-02	6.00E-04		**9E-06**
1,2-DICHLOROETHANE	107-06-2	7.20E-02	Y	6.90E-02	6.90E-02	7.00E+00	**1E-02**	**1E-02**	2.56E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	8.00E-02	N	7.67E-02	7.67E-02	6.00E+01	**1E-03**	**1E-03**	2.85E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.55E-02	N	4.36E-02	4.36E-02	8.00E+02	**5E-05**	**5E-05**	1.62E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	3.80E-01	Y	3.64E-01	3.64E-01	3.00E+01	**1E-02**	**1E-02**	1.35E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	1.01E-01	1.01E-01	1.00E+00	**1E-01**	**1E-01**	3.74E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	1.05E-01	1.05E-01	NA	---	---	3.92E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	6.00E-01	N	5.75E-01	5.75E-01	5.00E+00	**1E-01**	**1E-01**	2.14E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	4.03E-01	4.03E-01	1.00E+02	**4E-03**	**4E-03**	1.50E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	7.60E-02	Y	7.29E-02	7.29E-02	9.77E+01	**7E-04**	**7E-04**	2.71E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.60E-01	Y	2.49E-01	2.49E-01	1.00E+03	**2E-04**	**2E-04**	9.26E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.10E-01	N	3.93E-01	3.93E-01	NA	---	---	1.46E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	1.10E+01	Y	1.05E+01	1.05E+01	2.00E+02	**5E-02**	**5E-02**	3.92E+00	-		**---**
M,P-XYLENE	108-38-3	1.10E+00	Y	1.05E+00	1.05E+00	1.00E+02	**1E-02**	**1E-02**	3.92E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	4.90E-01	Y	4.70E-01	4.70E-01	6.00E+02	**8E-04**	**8E-04**	M	1.00E-08	M	**5E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	4.10E-01	Y	3.93E-01	3.93E-01	1.00E+02	**4E-03**	**4E-03**	1.46E-01	-		**---**
TETRACHLOROETHENE	127-18-4	9.20E-02	Y	8.82E-02	8.82E-02	4.00E+01	**2E-03**	**2E-03**	3.28E-02	2.60E-07		**9E-09**
TRICHLOROETHENE	79-01-6	8.00E-03	N	7.67E-03	7.67E-03	2.00E+00	**4E-03**	**4E-03**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	3.80E-03	N	3.64E-03	3.64E-03	8.00E+01	**5E-05**	**5E-05**	M	4.40E-06	M	**2E-08**

			HI$_{child}$	HI$_{adult}$	Risk$_{lifetime}$
Residential	**0329H**	**Total Inhalation**	**7E-01**	**7E-01**	**2E-05**
		Based on NDs only	**6E-01**	**6E-01**	**2E-05**
		Based on Detects only	**1E-01**	**1E-01**	**3E-06**
		Site-related only	**9E-03**	**9E-03**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0329H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.90E-01	1.34E-01	8.05E-02	2.01E-01	6.71E-02	1.0E-08		1E-09	8E-10	2E-09	7E-10	**5E-09**
TRICHLOROETHENE	79-01-6	8.00E-03	2.19E-03	1.32E-03	3.29E-03	1.10E-03	1.0E-06	kidney	2E-09	1E-09	3E-09	1E-09	**8E-09**
TRICHLOROETHENE	79-01-6	8.00E-03	6.58E-04		2.19E-03		3.1E-06	NHL+liver	2E-09		7E-09		**9E-09**
VINYL CHLORIDE	75-01-4	3.80E-03	1.04E-03	6.25E-04	1.56E-03	5.21E-04	4.4E-06		5E-09	3E-09	7E-09	2E-09	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0334H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	6.57E-02	6.57E-02	NA	---	---	2.44E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.12E+00	2.12E+00	2.00E+00	**1E+00**	**1E+00**	7.89E-01	3.00E-05		**2E-05**
1,4-DIOXANE	123-91-1	3.61E-01	N	3.46E-01	3.46E-01	3.00E+01	**1E-02**	**1E-02**	1.28E-01	5.00E-06		**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	7.82E-02	7.82E-02	2.00E-01	**4E-01**	**4E-01**	2.90E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.23E+00	2.23E+00	2.00E+00	**1E+00**	**1E+00**	8.30E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	7.38E-02	7.38E-02	9.00E+00	**8E-03**	**8E-03**	2.74E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	9.92E-02	Y	9.51E-02	9.51E-02	7.00E+00	**1E-02**	**1E-02**	3.53E-02	2.60E-05		**9E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	6.66E-02	6.66E-02	4.00E+00	**2E-02**	**2E-02**	2.48E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.42E-02	Y	8.07E-02	8.07E-02	8.00E+02	**1E-04**	**1E-04**	3.00E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	5.78E-01	Y	5.54E-01	5.54E-01	3.00E+01	**2E-02**	**2E-02**	2.06E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	4.99E-01	4.99E-01	1.00E+00	**5E-01**	**5E-01**	1.85E-01	4.90E-05		**9E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	6.42E-01	6.42E-01	NA	---	---	2.39E-01	3.70E-05		**9E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	3.72E-01	3.72E-01	5.00E+00	**7E-02**	**7E-02**	1.38E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.40E-01	Y	5.18E-01	5.18E-01	1.00E+02	**5E-03**	**5E-03**	1.92E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.67E+00	Y	1.60E+00	1.60E+00	9.77E+01	**2E-02**	**2E-02**	5.95E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.71E-01	Y	2.60E-01	2.60E-01	1.00E+03	**3E-04**	**3E-04**	9.65E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	3.23E+00	3.23E+00	NA	---	---	1.20E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL	67-63-0	7.94E+00	Y	7.61E+00	7.61E+00	2.00E+02	**4E-02**	**4E-02**	2.83E+00	-		**---**
M,P-XYLENE	108-38-3	8.45E-01	Y	8.10E-01	8.10E-01	1.00E+02	**8E-03**	**8E-03**	3.01E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	6.49E-01	Y	6.22E-01	6.22E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**6E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.58E+00	1.58E+00	3.00E+00	**5E-01**	**5E-01**	5.88E-01	3.40E-05		**2E-05**
O-XYLENE	95-47-6	4.34E-01	N	4.16E-01	4.16E-01	1.00E+02	**4E-03**	**4E-03**	1.54E-01	-		**---**
TETRACHLOROETHENE	127-18-4	9.64E-02	Y	9.24E-02	9.24E-02	4.00E+01	**2E-03**	**2E-03**	3.43E-02	2.60E-07		**9E-09**
TRICHLOROETHENE	79-01-6	5.35E-02	N	5.13E-02	5.13E-02	2.00E+00	**3E-02**	**3E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	3.52E-02	N	3.38E-02	3.38E-02	2.00E+02	**2E-04**	**2E-04**	1.25E-02	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	2.45E-02	2.45E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0334H**	**Total Inhalation**	**4E+00**	**4E+00**	**1E-04**
		Based on NDs only	**4E+00**	**4E+00**	**1E-04**
		Based on Detects only	**1E-01**	**1E-01**	**2E-05**
		Site-related only	**4E-02**	**4E-02**	**9E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0334H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.49E-01	1.78E-01	1.07E-01	2.67E-01	8.89E-02	1.0E-08		2E-09	1E-09	3E-09	9E-10	**6E-09**
TRICHLOROETHENE	79-01-6	5.35E-02	1.47E-02	8.79E-03	2.20E-02	7.33E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.35E-02	4.40E-03		1.47E-02		3.1E-06	NHL+liver	1E-08		5E-08		**6E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	7.00E-03	4.20E-03	1.05E-02	3.50E-03	4.4E-06		3E-08	2E-08	5E-08	2E-08	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0336H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-02	N	2.30E-02	2.30E-02	NA	---	---	8.55E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	4.90E-02	N	4.70E-02	4.70E-02	2.00E+00	**2E-02**	**2E-02**	1.75E-02	3.00E-05		**5E-07**
1,4-DIOXANE	123-91-1	8.00E-02	N	7.67E-02	7.67E-02	3.00E+01	**3E-03**	**3E-03**	2.85E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.15E-02	N	1.10E-02	1.10E-02	2.00E-01	**6E-02**	**6E-02**	4.10E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.90E-01	N	4.70E-01	4.70E-01	2.00E+00	**2E-01**	**2E-01**	1.75E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.20E-01	Y	2.11E-01	2.11E-01	6.00E+01	**4E-03**	**4E-03**	7.84E-02	-		---
1,2-DIBROMOETHANE	106-93-4	4.25E-02	N	4.08E-02	4.08E-02	9.00E+00	**5E-03**	**5E-03**	1.51E-02	6.00E-04		**9E-06**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	7.38E-02	7.38E-02	7.00E+00	**1E-02**	**1E-02**	2.74E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	8.00E-02	N	7.67E-02	7.67E-02	6.00E+01	**1E-03**	**1E-03**	2.85E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.50E-02	N	4.32E-02	4.32E-02	8.00E+02	**5E-05**	**5E-05**	1.60E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	5.50E-01	Y	5.27E-01	5.27E-01	3.00E+01	**2E-02**	**2E-02**	1.96E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	1.01E-01	1.01E-01	1.00E+00	**1E-01**	**1E-01**	3.74E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	1.05E-01	1.05E-01	NA	---	---	3.92E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	5.50E-01	N	5.27E-01	5.27E-01	5.00E+00	**1E-01**	**1E-01**	1.96E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	4.03E-01	4.03E-01	1.00E+02	**4E-03**	**4E-03**	1.50E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	3.10E-01	Y	2.97E-01	2.97E-01	9.77E+01	**3E-03**	**3E-03**	1.10E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.10E-01	Y	2.01E-01	2.01E-01	1.00E+03	**2E-04**	**2E-04**	7.48E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.05E-01	N	3.88E-01	3.88E-01	NA	---	---	1.44E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	1.90E+01	Y	1.82E+01	1.82E+01	2.00E+02	**9E-02**	**9E-02**	6.77E+00	-		---
M,P-XYLENE	108-38-3	6.90E-01	Y	6.62E-01	6.62E-01	1.00E+02	**7E-03**	**7E-03**	2.46E-01	-		---
METHYLENE CHLORIDE	75-09-2	5.00E-01	Y	4.79E-01	4.79E-01	6.00E+02	**8E-04**	**8E-04**	M	1.00E-08	M	**5E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.30E-01	Y	2.21E-01	2.21E-01	1.00E+02	**2E-03**	**2E-03**	8.19E-02	-		---
TETRACHLOROETHENE	127-18-4	1.60E+01	Y	1.53E+01	1.53E+01	4.00E+01	**4E-01**	**4E-01**	5.70E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	1.80E-02	Y	1.73E-02	1.73E-02	2.00E+00	**9E-03**	**9E-03**	M	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	3.80E-03	N	3.64E-03	3.64E-03	8.00E+01	**5E-05**	**5E-05**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0336H**	**Total Inhalation**	**1E+00**	**1E+00**	**2E-05**
		Based on NDs only	**6E-01**	**6E-01**	**2E-05**
		Based on Detects only	**5E-01**	**5E-01**	**7E-06**
		Site-related only	**4E-01**	**4E-01**	**2E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0336H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.00E-01	1.37E-01	8.22E-02	2.05E-01	6.85E-02	1.0E-08		1E-09	8E-10	2E-09	7E-10	**5E-09**
TRICHLOROETHENE	79-01-6	1.80E-02	4.93E-03	2.96E-03	7.40E-03	2.47E-03	1.0E-06	kidney	5E-09	3E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.80E-02	1.48E-03		4.93E-03		3.1E-06	NHL+liver	5E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	3.80E-03	1.04E-03	6.25E-04	1.56E-03	5.21E-04	4.4E-06		5E-09	3E-09	7E-09	2E-09	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0347H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.55E-02	N	2.45E-02	2.45E-02	NA	---	---	9.08E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	1.78E-02	3.00E-05		**5E-07**
1,4-DIOXANE	123-91-1	8.50E-02	N	8.15E-02	8.15E-02	3.00E+01	**3E-03**	**3E-03**	3.03E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.25E-02	N	1.20E-02	1.20E-02	2.00E-01	**6E-02**	**6E-02**	4.45E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	4.79E-01	4.79E-01	2.00E+00	**2E-01**	**2E-01**	1.78E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.30E-01	Y	4.12E-01	4.12E-01	6.00E+01	**7E-03**	**7E-03**	1.53E-01	-		---
1,2-DIBROMOETHANE	106-93-4	4.55E-02	N	4.36E-02	4.36E-02	9.00E+00	**5E-03**	**5E-03**	1.62E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	1.20E+00	Y	1.15E+00	1.15E+00	7.00E+00	**2E-01**	**2E-01**	4.27E-01	2.60E-05		**1E-05**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	9.59E-02	9.59E-02	4.00E+00	**2E-02**	**2E-02**	3.56E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	8.50E-02	N	8.15E-02	8.15E-02	6.00E+01	**1E-03**	**1E-03**	3.03E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.80E-02	N	4.60E-02	4.60E-02	8.00E+02	**6E-05**	**6E-05**	1.71E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	4.90E-01	Y	4.70E-01	4.70E-01	3.00E+01	**2E-02**	**2E-02**	1.75E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	1.15E-01	N	1.10E-01	1.10E-01	1.00E+00	**1E-01**	**1E-01**	4.10E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	1.15E-01	N	1.10E-01	1.10E-01	NA	---	---	4.10E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	6.00E-01	N	5.75E-01	5.75E-01	5.00E+00	**1E-01**	**1E-01**	2.14E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	4.03E-01	4.03E-01	1.00E+02	**4E-03**	**4E-03**	1.50E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	1.00E+00	Y	9.59E-01	9.59E-01	9.77E+01	**1E-02**	**1E-02**	3.56E-01	2.30E-05		**8E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	6.30E-01	Y	6.04E-01	6.04E-01	1.00E+03	**6E-04**	**6E-04**	2.24E-01	2.50E-06		**6E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.35E-01	N	4.17E-01	4.17E-01	NA	---	---	1.55E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	1.50E+01	Y	1.44E+01	1.44E+01	2.00E+02	**7E-02**	**7E-02**	5.34E+00	-		---
M,P-XYLENE	108-38-3	2.00E+00	Y	1.92E+00	1.92E+00	1.00E+02	**2E-02**	**2E-02**	7.12E-01	-		---
METHYLENE CHLORIDE	75-09-2	5.00E-01	Y	4.79E-01	4.79E-01	6.00E+02	**8E-04**	**8E-04**	M	1.00E-08	M	**5E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	6.40E-01	Y	6.14E-01	6.14E-01	1.00E+02	**6E-03**	**6E-03**	2.28E-01	-		---
TETRACHLOROETHENE	127-18-4	9.00E-02	Y	8.63E-02	8.63E-02	4.00E+01	**2E-03**	**2E-03**	3.21E-02	2.60E-07		**8E-09**
TRICHLOROETHENE	79-01-6	2.70E-02	Y	2.59E-02	2.59E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	4.05E-03	N	3.88E-03	3.88E-03	8.00E+01	**5E-05**	**5E-05**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0347H**	**Total Inhalation**	**9E-01**	**9E-01**	**4E-05**
		Based on NDs only	**6E-01**	**6E-01**	**2E-05**
		Based on Detects only	**3E-01**	**3E-01**	**2E-05**
		Site-related only	**2E-02**	**2E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0347H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.00E-01	1.37E-01	8.22E-02	2.05E-01	6.85E-02	1.0E-08		1E-09	8E-10	2E-09	7E-10	**5E-09**
TRICHLOROETHENE	79-01-6	2.70E-02	7.40E-03	4.44E-03	1.11E-02	3.70E-03	1.0E-06	kidney	7E-09	4E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.70E-02	2.22E-03		7.40E-03		3.1E-06	NHL+liver	7E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	4.05E-03	1.11E-03	6.66E-04	1.66E-03	5.55E-04	4.4E-06		5E-09	3E-09	7E-09	2E-09	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0381H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.15E-02	N	1.10E-02	1.10E-02	NA	---	---	4.10E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	5.50E-02	N	5.27E-02	5.27E-02	2.00E+00	**3E-02**	**3E-02**	1.96E-02	3.00E-05		**6E-07**
1,4-DIOXANE	123-91-1	4.30E-01	Y	4.12E-01	4.12E-01	3.00E+01	**1E-02**	**1E-02**	1.53E-01	5.00E-06		**8E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	7.19E-03	7.19E-03	2.00E-01	**4E-02**	**4E-02**	2.67E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.50E-01	N	5.27E-01	5.27E-01	2.00E+00	**3E-01**	**3E-01**	1.96E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.10E-01	Y	2.01E-01	2.01E-01	6.00E+01	**3E-03**	**3E-03**	7.48E-02	-		---
1,2-DIBROMOETHANE	106-93-4	3.65E-02	N	3.50E-02	3.50E-02	9.00E+00	**4E-03**	**4E-03**	1.30E-02	6.00E-04		**8E-06**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	1.05E-01	1.05E-01	7.00E+00	**2E-02**	**2E-02**	3.92E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	9.59E-02	9.59E-02	4.00E+00	**2E-02**	**2E-02**	3.56E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	6.50E-02	N	6.23E-02	6.23E-02	6.00E+01	**1E-03**	**1E-03**	2.32E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	5.27E-02	5.27E-02	8.00E+02	**7E-05**	**7E-05**	1.96E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	7.60E-01	Y	7.29E-01	7.29E-01	3.00E+01	**2E-02**	**2E-02**	2.71E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	9.50E-02	N	9.11E-02	9.11E-02	1.00E+00	**9E-02**	**9E-02**	3.38E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	1.40E-01	N	1.34E-01	1.34E-01	NA	---	---	4.99E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	6.71E-01	6.71E-01	5.00E+00	**1E-01**	**1E-01**	2.49E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	3.93E-01	3.93E-01	1.00E+02	**4E-03**	**4E-03**	1.46E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	9.60E-01	Y	9.21E-01	9.21E-01	9.77E+01	**9E-03**	**9E-03**	3.42E-01	2.30E-05		**8E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.40E+00	Y	2.30E+00	2.30E+00	1.00E+03	**2E-03**	**2E-03**	8.55E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	6.71E-01	6.71E-01	NA	---	---	2.49E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL	67-63-0	2.40E+01	Y	2.30E+01	2.30E+01	2.00E+02	**1E-01**	**1E-01**	8.55E+00	-		---
M,P-XYLENE	108-38-3	1.00E+01	Y	9.59E+00	9.59E+00	1.00E+02	**1E-01**	**1E-01**	3.56E+00	-		---
METHYLENE CHLORIDE	75-09-2	2.80E-01	N	2.68E-01	2.68E-01	6.00E+02	**4E-04**	**4E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.70E+00	Y	2.59E+00	2.59E+00	1.00E+02	**3E-02**	**3E-02**	9.62E-01	-		---
TETRACHLOROETHENE	127-18-4	6.20E-02	Y	5.95E-02	5.95E-02	4.00E+01	**1E-03**	**1E-03**	2.21E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	1.80E-02	N	1.73E-02	1.73E-02	2.00E+00	**9E-03**	**9E-03**	M	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	9.00E-03	N	8.63E-03	8.63E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**4E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0381H**	**Total Inhalation**	**9E-01**	**9E-01**	**3E-05**
		Based on NDs only	**6E-01**	**6E-01**	**2E-05**
		Based on Detects only	**3E-01**	**3E-01**	**1E-05**
		Site-related only	**2E-02**	**2E-02**	**8E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0381H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.80E-01	7.67E-02	4.60E-02	1.15E-01	3.84E-02	1.0E-08		8E-10	5E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.80E-02	4.93E-03	2.96E-03	7.40E-03	2.47E-03	1.0E-06	kidney	5E-09	3E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.80E-02	1.48E-03		4.93E-03		3.1E-06	NHL+liver	5E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	9.00E-03	2.47E-03	1.48E-03	3.70E-03	1.23E-03	4.4E-06		1E-08	7E-09	2E-08	5E-09	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0392H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.30E-02	N	2.21E-02	2.21E-02	NA	---	---	8.19E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	1.10E-01	N	1.05E-01	1.05E-01	2.00E+00	**5E-02**	**5E-02**	3.92E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	1.55E-01	N	1.49E-01	1.49E-01	3.00E+01	**5E-03**	**5E-03**	5.52E-02	5.00E-06		**3E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.50E-02	N	1.44E-02	1.44E-02	2.00E-01	**7E-02**	**7E-02**	5.34E-03	1.60E-05		**9E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.05E+00	N	1.01E+00	1.01E+00	2.00E+00	**5E-01**	**5E-01**	3.74E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.60E-01	Y	4.41E-01	4.41E-01	6.00E+01	**7E-03**	**7E-03**	1.64E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	6.71E-02	6.71E-02	9.00E+00	**7E-03**	**7E-03**	2.49E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	8.40E-02	Y	8.05E-02	8.05E-02	7.00E+00	**1E-02**	**1E-02**	2.99E-02	2.60E-05		**8E-07**
1,2-DICHLOROPROPANE	78-87-5	2.00E-01	N	1.92E-01	1.92E-01	4.00E+00	**5E-02**	**5E-02**	7.12E-02	3.70E-06		**3E-07**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	1.25E-01	1.25E-01	6.00E+01	**2E-03**	**2E-03**	4.63E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.10E-01	N	1.05E-01	1.05E-01	8.00E+02	**1E-04**	**1E-04**	3.92E-02	1.10E-05		**4E-07**
BENZENE	71-43-2	6.30E-01	Y	6.04E-01	6.04E-01	3.00E+01	**2E-02**	**2E-02**	2.24E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	1.85E-01	N	1.77E-01	1.77E-01	1.00E+00	**2E-01**	**2E-01**	6.59E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	2.75E-01	N	2.64E-01	2.64E-01	NA	---	---	9.79E-02	3.70E-05		**4E-06**
BROMOMETHANE	74-83-9	1.45E+00	N	1.39E+00	1.39E+00	5.00E+00	**3E-01**	**3E-01**	5.16E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	3.64E-01	3.64E-01	1.00E+02	**4E-03**	**4E-03**	1.35E-01	6.00E-06		**8E-07**
CHLOROFORM	67-66-3	2.70E-01	Y	2.59E-01	2.59E-01	9.77E+01	**3E-03**	**3E-03**	9.62E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	3.00E-01	Y	2.88E-01	2.88E-01	1.00E+03	**3E-04**	**3E-04**	1.07E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.40E+00	N	1.34E+00	1.34E+00	NA	---	---	4.99E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL	67-63-0	2.60E+01	Y	2.49E+01	2.49E+01	2.00E+02	**1E-01**	**1E-01**	9.26E+00	-		**---**
M,P-XYLENE	108-38-3	1.20E+00	Y	1.15E+00	1.15E+00	1.00E+02	**1E-02**	**1E-02**	4.27E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.10E-01	N	2.97E-01	2.97E-01	6.00E+02	**5E-04**	**5E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	5.20E-01	Y	4.99E-01	4.99E-01	1.00E+02	**5E-03**	**5E-03**	1.85E-01	-		**---**
TETRACHLOROETHENE	127-18-4	7.40E-02	Y	7.10E-02	7.10E-02	4.00E+01	**2E-03**	**2E-03**	2.64E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	3.60E-02	N	3.45E-02	3.45E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	1.75E-02	N	1.68E-02	1.68E-02	8.00E+01	**2E-04**	**2E-04**	M	4.40E-06	M	**8E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0392H**	**Total Inhalation**	**1E+00**	**1E+00**	**4E-05**
		Based on NDs only	**1E+00**	**1E+00**	**4E-05**
		Based on Detects only	**2E-01**	**2E-01**	**6E-06**
		Site-related only	**2E-02**	**2E-02**	**4E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0392H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.10E-01	8.49E-02	5.10E-02	1.27E-01	4.25E-02	1.0E-08		8E-10	5E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	3.60E-02	9.86E-03	5.92E-03	1.48E-02	4.93E-03	1.0E-06	kidney	1E-08	6E-09	1E-08	5E-09	**4E-08**
TRICHLOROETHENE	79-01-6	3.60E-02	2.96E-03		9.86E-03		3.1E-06	NHL+liver	9E-09		3E-08		**4E-08**
VINYL CHLORIDE	75-01-4	1.75E-02	4.79E-03	2.88E-03	7.19E-03	2.40E-03	4.4E-06		2E-08	1E-08	3E-08	1E-08	**8E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0395H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	6.57E-02	6.57E-02	NA	---	---	2.44E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.12E+00	2.12E+00	2.00E+00	**1E+00**	**1E+00**	7.89E-01	3.00E-05		**2E-05**
1,4-DIOXANE	123-91-1	3.61E-01	N	3.46E-01	3.46E-01	3.00E+01	**1E-02**	**1E-02**	1.28E-01	5.00E-06		**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	7.82E-02	7.82E-02	2.00E-01	**4E-01**	**4E-01**	2.90E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.23E+00	2.23E+00	2.00E+00	**1E+00**	**1E+00**	8.30E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	7.38E-02	7.38E-02	9.00E+00	**8E-03**	**8E-03**	2.74E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.60E-01	Y	1.53E-01	1.53E-01	7.00E+00	**2E-02**	**2E-02**	5.70E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	6.66E-02	6.66E-02	4.00E+00	**2E-02**	**2E-02**	2.48E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.13E-02	Y	5.88E-02	5.88E-02	8.00E+02	**7E-05**	**7E-05**	2.18E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	5.27E-01	Y	5.05E-01	5.05E-01	3.00E+01	**2E-02**	**2E-02**	1.88E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	4.99E-01	4.99E-01	1.00E+00	**5E-01**	**5E-01**	1.85E-01	4.90E-05		**9E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	6.42E-01	6.42E-01	NA	---	---	2.39E-01	3.70E-05		**9E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	3.72E-01	3.72E-01	5.00E+00	**7E-02**	**7E-02**	1.38E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	6.08E-01	Y	5.83E-01	5.83E-01	1.00E+02	**6E-03**	**6E-03**	2.17E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	5.31E-01	Y	5.09E-01	5.09E-01	9.77E+01	**5E-03**	**5E-03**	1.89E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.43E-01	Y	2.33E-01	2.33E-01	1.00E+03	**2E-04**	**2E-04**	8.65E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	3.23E+00	3.23E+00	NA	**---**	**---**	1.20E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL	67-63-0	3.52E+01	Y	3.38E+01	3.38E+01	2.00E+02	**2E-01**	**2E-01**	1.25E+01	-		**---**
M,P-XYLENE	108-38-3	8.65E-01	N	8.29E-01	8.29E-01	1.00E+02	**8E-03**	**8E-03**	3.08E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	6.91E-01	Y	6.63E-01	6.63E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.58E+00	1.58E+00	3.00E+00	**5E-01**	**5E-01**	5.88E-01	3.40E-05		**2E-05**
O-XYLENE	95-47-6	4.34E-01	N	4.16E-01	4.16E-01	1.00E+02	**4E-03**	**4E-03**	1.54E-01	-		**---**
TETRACHLOROETHENE	127-18-4	2.70E-01	Y	2.59E-01	2.59E-01	4.00E+01	**6E-03**	**6E-03**	9.62E-02	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.17E-01	Y	2.08E-01	2.08E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	3.52E-02	N	3.38E-02	3.38E-02	2.00E+02	**2E-04**	**2E-04**	1.25E-02	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	2.45E-02	2.45E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0395H**	**Total Inhalation**	**4E+00**	**4E+00**	**1E-04**
		Based on NDs only	**4E+00**	**4E+00**	**1E-04**
		Based on Detects only	**3E-01**	**3E-01**	**1E-05**
		Site-related only	**1E-01**	**1E-01**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0395H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.91E-01	1.89E-01	1.14E-01	2.84E-01	9.47E-02	1.0E-08		2E-09	1E-09	3E-09	9E-10	**7E-09**
TRICHLOROETHENE	79-01-6	2.17E-01	5.95E-02	3.57E-02	8.92E-02	2.97E-02	1.0E-06	kidney	6E-08	4E-08	9E-08	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.17E-01	1.78E-02		5.95E-02		3.1E-06	NHL+liver	6E-08		2E-07		**2E-07**
VINYL CHLORIDE	75-01-4	2.56E-02	7.00E-03	4.20E-03	1.05E-02	3.50E-03	4.4E-06		3E-08	2E-08	5E-08	2E-08	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**B20-I**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	1.05E-02	1.05E-02	NA	---	---	3.92E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	8.40E-01	Y	8.05E-01	8.05E-01	2.00E+00	**4E-01**	**4E-01**	2.99E-01	3.00E-05		**9E-06**
1,4-DIOXANE	123-91-1	7.50E-02	N	7.19E-02	7.19E-02	3.00E+01	**2E-03**	**2E-03**	2.67E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	6.71E-03	6.71E-03	2.00E-01	**3E-02**	**3E-02**	2.49E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	4.79E-01	4.79E-01	2.00E+00	**2E-01**	**2E-01**	1.78E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E-01	Y	1.15E-01	1.15E-01	6.00E+01	**2E-03**	**2E-03**	4.27E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.40E-02	N	3.26E-02	3.26E-02	9.00E+00	**4E-03**	**4E-03**	1.21E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	9.40E-02	Y	9.01E-02	9.01E-02	7.00E+00	**1E-02**	**1E-02**	3.35E-02	2.60E-05		**9E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	5.75E-02	5.75E-02	6.00E+01	**1E-03**	**1E-03**	2.14E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	3.10E-01	Y	2.97E-01	2.97E-01	8.00E+02	**4E-04**	**4E-04**	1.10E-01	1.10E-05		**1E-06**
BENZENE	71-43-2	5.20E-01	Y	4.99E-01	4.99E-01	3.00E+01	**2E-02**	**2E-02**	1.85E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	8.63E-02	8.63E-02	1.00E+00	**9E-02**	**9E-02**	3.21E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	1.25E-01	1.25E-01	NA	---	---	4.63E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	6.71E-01	6.71E-01	5.00E+00	**1E-01**	**1E-01**	2.49E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.90E-01	Y	3.74E-01	3.74E-01	1.00E+02	**4E-03**	**4E-03**	1.39E-01	6.00E-06		**8E-07**
CHLOROFORM	67-66-3	3.30E-01	Y	3.16E-01	3.16E-01	9.77E+01	**3E-03**	**3E-03**	1.18E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.40E-01	Y	1.34E-01	1.34E-01	1.00E+03	**1E-04**	**1E-04**	4.99E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	6.23E-01	6.23E-01	NA	**---**	**---**	2.32E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL	67-63-0	1.30E+01	Y	1.25E+01	1.25E+01	2.00E+02	**6E-02**	**6E-02**	4.63E+00	-		**---**
M,P-XYLENE	108-38-3	4.00E-01	Y	3.84E-01	3.84E-01	1.00E+02	**4E-03**	**4E-03**	1.42E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	2.95E-01	N	2.83E-01	2.83E-01	6.00E+02	**5E-04**	**5E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.40E-01	Y	1.34E-01	1.34E-01	1.00E+02	**1E-03**	**1E-03**	4.99E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.40E-01	Y	1.34E-01	1.34E-01	4.00E+01	**3E-03**	**3E-03**	4.99E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	2.70E-01	N	2.59E-01	2.59E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**6E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	8.50E-03	N	8.15E-03	8.15E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**4E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**B20-I**	**Total Inhalation**	**1E+00**	**1E+00**	**3E-05**
		Based on NDs only	**7E-01**	**7E-01**	**2E-05**
		Based on Detects only	**5E-01**	**5E-01**	**2E-05**
		Site-related only	**1E-01**	**1E-01**	**7E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**B20-I**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.95E-01	8.08E-02	4.85E-02	1.21E-01	4.04E-02	1.0E-08		8E-10	5E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.70E-01	7.40E-02	4.44E-02	1.11E-01	3.70E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	4E-08	**3E-07**
TRICHLOROETHENE	79-01-6	2.70E-01	2.22E-02		7.40E-02		3.1E-06	NHL+liver	7E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	8.50E-03	2.33E-03	1.40E-03	3.49E-03	1.16E-03	4.4E-06		1E-08	6E-09	2E-08	5E-09	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**B32**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.20E-02	N	1.15E-02	1.15E-02	NA	---	---	4.27E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	5.50E-02	N	5.27E-02	5.27E-02	2.00E+00	**3E-02**	**3E-02**	1.96E-02	3.00E-05		**6E-07**
1,4-DIOXANE	123-91-1	8.00E-02	N	7.67E-02	7.67E-02	3.00E+01	**3E-03**	**3E-03**	2.85E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.00E-03	N	7.67E-03	7.67E-03	2.00E-01	**4E-02**	**4E-02**	2.85E-03	1.60E-05		**5E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.50E-01	N	5.27E-01	5.27E-01	2.00E+00	**3E-01**	**3E-01**	1.96E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E-01	Y	1.34E-01	1.34E-01	6.00E+01	**2E-03**	**2E-03**	4.99E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.80E-02	N	3.64E-02	3.64E-02	9.00E+00	**4E-03**	**4E-03**	1.35E-02	6.00E-04		**8E-06**
1,2-DICHLOROETHANE	107-06-2	3.30E-01	Y	3.16E-01	3.16E-01	7.00E+00	**5E-02**	**5E-02**	1.18E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	1.01E-01	1.01E-01	4.00E+00	**3E-02**	**3E-02**	3.74E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	7.00E-02	N	6.71E-02	6.71E-02	6.00E+01	**1E-03**	**1E-03**	2.49E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	5.75E-02	5.75E-02	8.00E+02	**7E-05**	**7E-05**	2.14E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	4.00E-01	Y	3.84E-01	3.84E-01	3.00E+01	**1E-02**	**1E-02**	1.42E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	1.00E-01	N	9.59E-02	9.59E-02	1.00E+00	**1E-01**	**1E-01**	3.56E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	1.45E-01	N	1.39E-01	1.39E-01	NA	---	---	5.16E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	7.50E-01	N	7.19E-01	7.19E-01	5.00E+00	**1E-01**	**1E-01**	2.67E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	3.84E-01	3.84E-01	1.00E+02	**4E-03**	**4E-03**	1.42E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	4.80E-01	Y	4.60E-01	4.60E-01	9.77E+01	**5E-03**	**5E-03**	1.71E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.20E-01	Y	1.15E-01	1.15E-01	1.00E+03	**1E-04**	**1E-04**	4.27E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	7.19E-01	7.19E-01	NA	---	---	2.67E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	5.30E+01	Y	5.08E+01	5.08E+01	2.00E+02	**3E-01**	**3E-01**	1.89E+01	-		**---**
M,P-XYLENE	108-38-3	3.90E-01	Y	3.74E-01	3.74E-01	1.00E+02	**4E-03**	**4E-03**	1.39E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.60E-01	N	3.45E-01	3.45E-01	6.00E+02	**6E-04**	**6E-04**	M	1.00E-08	M	**4E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.60E-01	Y	1.53E-01	1.53E-01	1.00E+02	**2E-03**	**2E-03**	5.70E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.80E-02	Y	4.60E-02	4.60E-02	4.00E+01	**1E-03**	**1E-03**	1.71E-02	2.60E-07		**4E-09**
TRICHLOROETHENE	79-01-6	1.90E-02	N	1.82E-02	1.82E-02	2.00E+00	**9E-03**	**9E-03**	M	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	9.50E-03	N	9.11E-03	9.11E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**4E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**B32**	**Total Inhalation**	**9E-01**	**9E-01**	**3E-05**
		Based on NDs only	**6E-01**	**6E-01**	**2E-05**
		Based on Detects only	**3E-01**	**3E-01**	**9E-06**
		Site-related only	**1E-02**	**1E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**B32**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.60E-01	9.86E-02	5.92E-02	1.48E-01	4.93E-02	1.0E-08		1E-09	6E-10	1E-09	5E-10	**4E-09**
TRICHLOROETHENE	79-01-6	1.90E-02	5.21E-03	3.12E-03	7.81E-03	2.60E-03	1.0E-06	kidney	5E-09	3E-09	8E-09	3E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.90E-02	1.56E-03		5.21E-03		3.1E-06	NHL+liver	5E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	9.50E-03	2.60E-03	1.56E-03	3.90E-03	1.30E-03	4.4E-06		1E-08	7E-09	2E-08	6E-09	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Students**
Exposure Area:	**0045S**

Pathway:
Inhalation of Indoor Air

	RME primary	RME secondary		RME lifetime
TWFnc (unitless)	1.03E-01	1.23E-01	TWFc (unitless)	2.08E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	2.50E-01	N	2.57E-02	3.08E-02	7.00E+00	**4E-03**	**4E-03**	5.21E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	4.00E+01	Y	4.11E+00	4.93E+00	4.00E+01	**1E-01**	**1E-01**	8.34E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	1.30E+00	Y	1.34E-01	1.60E-01	2.00E+00	**7E-02**	**8E-02**	2.71E-02	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	5.30E-01	Y	5.45E-02	6.53E-02	8.00E+01	**7E-04**	**8E-04**	1.10E-02	4.40E-06	M	**2E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Students	**0045S**	**Total Inhalation**	**2E-01**	**2E-01**	**7E-07**
		Based on NDs only	**4E-03**	**4E-03**	**1E-07**
		Based on Detects only	**2E-01**	**2E-01**	**6E-07**
		Site-related only	**2E-01**	**2E-01**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Students**
Exposure Area:	**0045S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME primary	RME secondary
TWFc (unitless)	1.03E-02	1.06E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.30E+00	4.45E-02	2.67E-02	2.06E-02	6.87E-03	1.0E-06	kidney	4E-08	3E-08	2E-08	7E-09	**1E-07**
TRICHLOROETHENE	79-01-6	1.30E+00	1.34E-02		1.37E-02		3.1E-06	NHL+liver	4E-08		4E-08		**8E-08**
VINYL CHLORIDE	75-01-4	5.30E-01	1.82E-02	1.09E-02	8.40E-03	2.80E-03	4.4E-06		8E-08	5E-08	4E-08	1E-08	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Students**
Exposure Area:	**365S**

Pathway:
Inhalation of Indoor Air

	RME primary	RME secondary		RME lifetime
TWFnc (unitless)	1.03E-01	1.23E-01	TWFc (unitless)	2.08E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.30E-02	N	1.34E-03	1.60E-03	NA	---	---	2.71E-04	5.80E-05		**2E-08**
1,3-BUTADIENE	106-99-0	6.00E-02	N	6.16E-03	7.40E-03	2.00E+00	**3E-03**	**4E-03**	1.25E-03	3.00E-05		**4E-08**
1,4-DIOXANE	123-91-1	9.00E-02	N	9.25E-03	1.11E-02	3.00E+01	**3E-04**	**4E-04**	1.88E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	8.50E-03	N	8.73E-04	1.05E-03	2.00E-01	**4E-03**	**5E-03**	1.77E-04	1.60E-05		**3E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	6.16E-02	7.40E-02	2.00E+00	**3E-02**	**4E-02**	1.25E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	2.20E-01	Y	2.26E-02	2.71E-02	6.00E+01	**4E-04**	**5E-04**	4.59E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.05E-02	N	4.16E-03	4.99E-03	9.00E+00	**5E-04**	**6E-04**	8.44E-04	6.00E-04		**5E-07**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	1.13E-02	1.36E-02	7.00E+00	**2E-03**	**2E-03**	2.29E-03	2.60E-05		**6E-08**
1,2-DICHLOROPROPANE	78-87-5	1.10E-01	N	1.13E-02	1.36E-02	4.00E+00	**3E-03**	**3E-03**	2.29E-03	3.70E-06		**8E-09**
1,3,5-Trimethylbenzene	108-67-8	7.00E-02	N	7.19E-03	8.63E-03	6.00E+01	**1E-04**	**1E-04**	1.46E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.50E-02	N	6.68E-03	8.01E-03	8.00E+02	**8E-06**	**1E-05**	1.35E-03	1.10E-05		**1E-08**
BENZENE	71-43-2	4.60E-01	Y	4.73E-02	5.67E-02	3.00E+01	**2E-03**	**2E-03**	9.59E-03	7.80E-06		**7E-08**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	1.08E-02	1.29E-02	1.00E+00	**1E-02**	**1E-02**	2.19E-03	4.90E-05		**1E-07**
BROMODICHLOROMETHANE	75-27-4	1.55E-01	N	1.59E-02	1.91E-02	NA	---	---	3.23E-03	3.70E-05		**1E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	8.22E-02	9.86E-02	5.00E+00	**2E-02**	**2E-02**	1.67E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	3.90E-02	4.68E-02	1.00E+02	**4E-04**	**5E-04**	7.92E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	1.00E-01	Y	1.03E-02	1.23E-02	9.77E+01	**1E-04**	**1E-04**	2.08E-03	2.30E-05		**5E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	5.30E-01	Y	5.45E-02	6.53E-02	1.00E+03	**5E-05**	**7E-05**	1.10E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	8.22E-02	9.86E-02	NA	---	---	1.67E-02	2.20E-05		**4E-07**
ISOPROPYL ALCOHOL	67-63-0	6.90E+01	Y	7.09E+00	8.51E+00	2.00E+02	**4E-02**	**4E-02**	1.44E+00	-		**---**
M,P-XYLENE	108-38-3	1.90E+00	Y	1.95E-01	2.34E-01	1.00E+02	**2E-03**	**2E-03**	3.96E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	6.00E-01	Y	6.16E-02	7.40E-02	6.00E+02	**1E-04**	**1E-04**	1.25E-02	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	6.10E-01	Y	6.27E-02	7.52E-02	1.00E+02	**6E-04**	**8E-04**	1.27E-02	-		**---**
TETRACHLOROETHENE	127-18-4	3.10E-01	Y	3.18E-02	3.82E-02	4.00E+01	**8E-04**	**1E-03**	6.46E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	2.00E-02	N	2.05E-03	2.47E-03	2.00E+00	**1E-03**	**1E-03**	4.17E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	1.00E-02	N	1.03E-03	1.23E-03	8.00E+01	**1E-05**	**2E-05**	2.08E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Students	**365S**	**Total Inhalation**	**1E-01**	**1E-01**	**1E-06**
		Based on NDs only	**7E-02**	**8E-02**	**1E-06**
		Based on Detects only	**4E-02**	**5E-02**	**3E-07**
		Site-related only	**2E-03**	**3E-03**	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Students**
Exposure Area:	**365S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME primary	RME secondary
TWFc (unitless)	1.03E-02	1.06E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.00E-01	2.05E-02	1.23E-02	9.51E-03	3.17E-03	1.0E-08		2E-10	1E-10	1E-10	3E-11	**5E-10**
TRICHLOROETHENE	79-01-6	2.00E-02	6.85E-04	4.11E-04	3.17E-04	1.06E-04	1.0E-06	kidney	7E-10	4E-10	3E-10	1E-10	**2E-09**
TRICHLOROETHENE	79-01-6	2.00E-02	2.05E-04		2.11E-04		3.1E-06	NHL+liver	6E-10		7E-10		**1E-09**
VINYL CHLORIDE	75-01-4	1.00E-02	3.42E-04	2.05E-04	1.59E-04	5.28E-05	4.4E-06		2E-09	9E-10	7E-10	2E-10	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0001H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.17E-01	NA	---	---	4.20E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.79E-02	2.00E+00	---	**2E-02**	1.35E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	2.06E-02	3.00E+01	---	**7E-04**	7.34E-03	5.00E-06		**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.56E-01	2.00E+00	---	**2E-01**	1.27E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	---	1.71E-01	6.00E+01	---	**3E-03**	6.12E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	1.30E+00	Y	---	2.97E-01	7.00E+00	---	**4E-02**	1.06E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	---	1.71E-01	6.00E+01	---	**3E-03**	6.12E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	---	2.06E-01	8.00E+02	---	**3E-04**	7.35E-02	1.10E-05		**8E-07**
BENZENE	71-43-2	6.50E-01	Y	---	1.48E-01	3.00E+01	---	**5E-03**	5.30E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	2.19E-01	1.00E+00	---	**2E-01**	7.81E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.15E-01	NA	---	---	4.10E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	---	6.64E-02	5.00E+00	---	**1E-02**	2.37E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	1.10E+00	Y	---	2.51E-01	1.00E+02	---	**3E-03**	8.97E-02	6.00E-06		**5E-07**
CHLOROFORM	67-66-3	1.30E+00	Y	---	2.97E-01	9.77E+01	---	**3E-03**	1.06E-01	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	2.10E+01	Y	---	4.79E+00	7.00E+01	---	**7E-02**	1.71E+00	-		**---**
ETHYLBENZENE	100-41-4	2.52E+00	Y	---	5.75E-01	1.00E+03	---	**6E-04**	2.05E-01	2.50E-06		**5E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.65E-01	NA	---	---	1.30E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
M,P-XYLENE	108-38-3	9.55E+00	Y	---	2.18E+00	1.00E+02	---	**2E-02**	7.79E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	1.94E+00	Y	---	4.44E-01	6.00E+02	---	**7E-04**	1.59E-01	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.43E+00	Y	---	5.55E-01	1.00E+02	---	**6E-03**	1.98E-01	-		**---**
TETRACHLOROETHENE	127-18-4	5.15E+00	Y	---	1.18E+00	4.00E+01	---	**3E-02**	4.20E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	---	8.03E-02	2.00E+02	---	**4E-04**	2.87E-02	-		**---**
VINYL CHLORIDE	75-01-4	1.74E-01	Y	---	3.97E-02	8.00E+01	---	**5E-04**	1.42E-02	4.40E-06	M	**6E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0001H**	**Total Inhalation**	**---**	**1E+00**	**5E-05**
		Based on NDs only	**0E+00**	**1E+00**	**4E-05**
		Based on Detects only	**#VALUE!**	**2E-01**	**7E-06**
		Site-related only	**0E+00**	**6E-02**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0001H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.94E+00	NA	NA	NA	1.59E-01	1.0E-08		---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	2.04E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	1.74E-01	NA	NA	NA	1.42E-02	4.4E-06		---	---	---	6E-08	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0002H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.17E-01	NA	---	---	4.20E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.79E-02	2.00E+00	---	**2E-02**	1.35E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	2.06E-02	3.00E+01	---	**7E-04**	7.34E-03	5.00E-06		**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.56E-01	2.00E+00	---	**2E-01**	1.27E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	---	1.71E-01	6.00E+01	---	**3E-03**	6.12E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	---	6.96E-02	7.00E+00	---	**1E-02**	2.49E-02	2.60E-05		**6E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	---	1.71E-01	6.00E+01	---	**3E-03**	6.12E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	---	2.06E-01	8.00E+02	---	**3E-04**	7.35E-02	1.10E-05		**8E-07**
BENZENE	71-43-2	5.50E-01	Y	---	1.26E-01	3.00E+01	---	**4E-03**	4.48E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	2.19E-01	1.00E+00	---	**2E-01**	7.81E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.15E-01	NA	---	---	4.10E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	---	6.64E-02	5.00E+00	---	**1E-02**	2.37E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	1.08E-01	1.00E+02	---	**1E-03**	3.84E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.32E+00	Y	---	3.01E-01	9.77E+01	---	**3E-03**	1.07E-01	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	1.84E+01	Y	---	4.19E+00	7.00E+01	---	**6E-02**	1.50E+00	-		---
ETHYLBENZENE	100-41-4	7.38E-01	Y	---	1.68E-01	1.00E+03	---	**2E-04**	6.02E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.65E-01	NA	---	---	1.30E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	5.40E+00	Y	---	1.23E+00	1.00E+02	---	**1E-02**	4.40E-01	-		---
METHYLENE CHLORIDE	75-09-2	8.68E+00	Y	---	1.98E+00	6.00E+02	---	**3E-03**	7.08E-01	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	9.70E-01	Y	---	2.21E-01	1.00E+02	---	**2E-03**	7.91E-02	-		---
TETRACHLOROETHENE	127-18-4	1.42E+00	Y	---	3.25E-01	4.00E+01	---	**8E-03**	1.16E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	---	6.62E-02	2.00E+00	---	**3E-02**	2.36E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	---	8.03E-02	2.00E+02	---	**4E-04**	2.87E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.48E-02	8.00E+01	---	**2E-04**	5.30E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0002H**	**Total Inhalation**	---	**1E+00**	**5E-05**
		Based on NDs only	**0E+00**	**1E+00**	**4E-05**
		Based on Detects only	**#VALUE!**	**1E-01**	**3E-06**
		Site-related only	**0E+00**	**4E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0002H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.68E+00	NA	NA	NA	7.08E-01	1.0E-08		---	---	---	7E-09	**7E-09**
TRICHLOROETHENE	79-01-6	2.90E-01	NA	NA	NA	2.36E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.90E-01	NA		2.36E-02		3.1E-06	NHL+liver	---		7E-08		**7E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	5.30E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0003H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	3.30E+00	Y	---	7.53E-01	NA	---	---	2.69E-01	5.80E-05		**2E-05**
1,3-BUTADIENE	106-99-0	2.90E-01	Y	---	6.62E-02	2.00E+00	---	**3E-02**	2.36E-02	3.00E-05		**7E-07**
1,4-DIOXANE	123-91-1	2.95E-01	N	---	6.74E-02	3.00E+01	---	**2E-03**	2.41E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	---	2.54E-01	2.00E+00	---	**1E-01**	9.07E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.60E+01	Y	---	5.95E+00	6.00E+01	---	**1E-01**	2.12E+00	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	2.00E-01	Y	---	4.57E-02	7.00E+00	---	**7E-03**	1.63E-02	2.60E-05		**4E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	7.90E+00	Y	---	1.80E+00	6.00E+01	---	**3E-02**	6.44E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	---	1.03E-01	8.00E+02	---	**1E-04**	3.67E-02	1.10E-05		**4E-07**
BENZENE	71-43-2	2.20E+01	Y	---	5.03E+00	3.00E+01	---	**2E-01**	1.80E+00	7.80E-06		**1E-05**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	---	1.83E-01	1.00E+00	---	**2E-01**	6.52E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.15E-01	NA	---	---	4.10E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	5.00E-01	N	---	1.14E-01	5.00E+00	---	**2E-02**	4.08E-02	-		---
CARBON TETRACHLORIDE	56-23-5	6.30E-01	Y	---	1.44E-01	1.00E+02	---	**1E-03**	5.14E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	4.73E+01	Y	---	1.08E+01	9.77E+01	---	**1E-01**	3.86E+00	2.30E-05		**9E-05**
ETHYL ACETATE	141-78-6	1.44E+01	Y	---	3.29E+00	7.00E+01	---	**5E-02**	1.17E+00	-		---
ETHYLBENZENE	100-41-4	1.30E+01	Y	---	2.97E+00	1.00E+03	---	**3E-03**	1.06E+00	2.50E-06		**3E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.65E-01	NA	---	---	1.30E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	2.60E+01	Y	---	5.94E+00	2.00E+02	---	**3E-02**	2.12E+00	-		---
M,P-XYLENE	108-38-3	6.95E+01	Y	---	1.59E+01	1.00E+02	---	**2E-01**	5.67E+00	-		---
METHYLENE CHLORIDE	75-09-2	9.50E-01	Y	---	2.17E-01	6.00E+02	---	**4E-04**	7.75E-02	1.00E-08	M	**8E-10**
NAPHTHALENE	91-20-3	7.00E-02	Y	---	1.60E-02	3.00E+00	---	**5E-03**	5.71E-03	3.40E-05		**2E-07**
O-XYLENE	95-47-6	2.20E+01	Y	---	5.02E+00	1.00E+02	---	**5E-02**	1.79E+00	-		---
TETRACHLOROETHENE	127-18-4	1.70E+01	Y	---	3.88E+00	4.00E+01	---	**1E-01**	1.39E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	4.10E-02	Y	---	9.36E-03	2.00E+00	---	**5E-03**	3.34E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	---	6.05E-02	2.00E+02	---	**3E-04**	2.16E-02	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	---	4.37E-02	8.00E+01	---	**5E-04**	1.56E-02	4.40E-06	M	**7E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0003H**	**Total Inhalation**	---	**2E+00**	**2E-04**
		Based on NDs only	**0E+00**	**8E-01**	**4E-05**
		Based on Detects only	**#VALUE!**	**8E-01**	**1E-04**
		Site-related only	**0E+00**	**1E-01**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0003H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.50E-01	NA	NA	NA	7.75E-02	1.0E-08		---	---	---	8E-10	**8E-10**
TRICHLOROETHENE	79-01-6	4.10E-02	NA	NA	NA	3.34E-03	1.0E-06	kidney	---	---	---	3E-09	**3E-09**
TRICHLOROETHENE	79-01-6	4.10E-02	NA		3.34E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	1.92E-01	NA	NA	NA	1.56E-02	4.4E-06		---	---	---	7E-08	**7E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0004H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.17E-01	NA	---	---	4.20E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.79E-02	2.00E+00	---	**2E-02**	1.35E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	2.06E-02	3.00E+01	---	**7E-04**	7.34E-03	5.00E-06		**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.56E-01	2.00E+00	---	**2E-01**	1.27E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	---	1.71E-01	6.00E+01	---	**3E-03**	6.12E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	---	6.96E-02	7.00E+00	---	**1E-02**	2.49E-02	2.60E-05		**6E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	---	1.71E-01	6.00E+01	---	**3E-03**	6.12E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	---	2.06E-01	8.00E+02	---	**3E-04**	7.35E-02	1.10E-05		**8E-07**
BENZENE	71-43-2	6.71E-01	Y	---	1.53E-01	3.00E+01	---	**5E-03**	5.47E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	2.19E-01	1.00E+00	---	**2E-01**	7.81E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.15E-01	NA	---	---	4.10E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	---	6.64E-02	5.00E+00	---	**1E-02**	2.37E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	1.08E-01	1.00E+02	---	**1E-03**	3.84E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	8.50E-01	Y	---	1.94E-01	9.77E+01	---	**2E-03**	6.93E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	1.60E+00	Y	---	3.65E-01	7.00E+01	---	**5E-03**	1.30E-01	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	---	7.43E-02	1.00E+03	---	**7E-05**	2.65E-02	2.50E-06		**7E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.65E-01	NA	---	---	1.30E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	9.99E-01	Y	---	2.28E-01	1.00E+02	---	**2E-03**	8.14E-02	-		---
METHYLENE CHLORIDE	75-09-2	2.10E+00	Y	---	4.79E-01	6.00E+02	---	**8E-04**	1.71E-01	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	---	7.43E-02	1.00E+02	---	**7E-04**	2.65E-02	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	---	8.03E-02	2.00E+02	---	**4E-04**	2.87E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.48E-02	8.00E+01	---	**2E-04**	5.30E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0004H**	**Total Inhalation**	---	**1E+00**	**4E-05**
		Based on NDs only	**0E+00**	**1E+00**	**4E-05**
		Based on Detects only	**#VALUE!**	**2E-02**	**2E-06**
		Site-related only	**0E+00**	**3E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0004H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.10E+00	NA	NA	NA	1.71E-01	1.0E-08		---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	2.04E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	5.30E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0008H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.17E-01	NA	---	---	4.20E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.79E-02	2.00E+00	---	**2E-02**	1.35E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	---	2.54E-01	2.00E+00	---	**1E-01**	9.07E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.70E+01	Y	---	6.17E+00	6.00E+01	---	**1E-01**	2.20E+00	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	---	6.96E-02	7.00E+00	---	**1E-02**	2.49E-02	2.60E-05		**6E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	8.84E+00	Y	---	2.02E+00	6.00E+01	---	**3E-02**	7.21E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	---	1.03E-01	8.00E+02	---	**1E-04**	3.67E-02	1.10E-05		**4E-07**
BENZENE	71-43-2	3.51E+01	Y	---	8.02E+00	3.00E+01	---	**3E-01**	2.86E+00	7.80E-06		**2E-05**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	---	1.83E-01	1.00E+00	---	**2E-01**	6.52E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.15E-01	NA	---	---	4.10E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	---	6.64E-02	5.00E+00	---	**1E-02**	2.37E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	1.08E-01	1.00E+02	---	**1E-03**	3.84E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.66E-01	N	---	8.36E-02	9.77E+01	---	**9E-04**	2.98E-02	2.30E-05		**7E-07**
ETHYL ACETATE	141-78-6	2.10E+00	Y	---	4.79E-01	7.00E+01	---	**7E-03**	1.71E-01	-		---
ETHYLBENZENE	100-41-4	2.73E+01	Y	---	6.24E+00	1.00E+03	---	**6E-03**	2.23E+00	2.50E-06		**6E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.65E-01	NA	---	---	1.30E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.22E+02	Y	---	2.78E+01	1.00E+02	---	**3E-01**	9.91E+00	-		---
METHYLENE CHLORIDE	75-09-2	8.00E-01	Y	---	1.83E-01	6.00E+02	---	**3E-04**	6.52E-02	1.00E-08	M	**7E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	4.04E+01	Y	---	9.21E+00	1.00E+02	---	**9E-02**	3.29E+00	-		---
TETRACHLOROETHENE	127-18-4	2.91E+00	Y	---	6.65E-01	4.00E+01	---	**2E-02**	2.38E-01	2.60E-07		**6E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	N	---	9.25E-02	2.00E+00	---	**5E-02**	3.30E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	---	6.05E-02	2.00E+02	---	**3E-04**	2.16E-02	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	---	4.37E-02	8.00E+01	---	**5E-04**	1.56E-02	4.40E-06	M	**7E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0008H**	**Total Inhalation**	---	**2E+00**	**7E-05**
		Based on NDs only	**0E+00**	**9E-01**	**4E-05**
		Based on Detects only	**#VALUE!**	**8E-01**	**3E-05**
		Site-related only	**0E+00**	**6E-02**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0008H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.00E-01	NA	NA	NA	6.52E-02	1.0E-08		---	---	---	7E-10	**7E-10**
TRICHLOROETHENE	79-01-6	4.05E-01	NA	NA	NA	3.30E-02	1.0E-06	kidney	---	---	---	3E-08	**3E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	NA		3.30E-02		3.1E-06	NHL+liver	---		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	1.92E-01	NA	NA	NA	1.56E-02	4.4E-06		---	---	---	7E-08	**7E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0011H**

Pathway:
Inhalation of Indoor Air

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.17E-01	NA	---	---	4.20E-02	5.80E-05	**2E-06**
1,3-BUTADIENE	106-99-0	1.40E-01	Y	---	3.20E-02	2.00E+00	---	**2E-02**	1.14E-02	3.00E-05	**3E-07**
1,4-DIOXANE	123-91-1	1.70E-01	Y	---	3.88E-02	3.00E+01	---	**1E-03**	1.39E-02	5.00E-06	**7E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05	**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.45E+00	N	---	3.31E-01	2.00E+00	---	**2E-01**	1.18E-01	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	3.60E-01	Y	---	8.22E-02	6.00E+01	---	**1E-03**	2.94E-02	-	**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04	**3E-05**
1,2-DICHLOROETHANE	107-06-2	1.20E-01	Y	---	2.74E-02	7.00E+00	---	**4E-03**	9.78E-03	2.60E-05	**3E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06	**1E-07**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	---	8.45E-02	6.00E+01	---	**1E-03**	3.02E-02	-	**---**
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	---	1.03E-01	8.00E+02	---	**1E-04**	3.67E-02	1.10E-05	**4E-07**
BENZENE	71-43-2	8.60E-01	Y	---	1.96E-01	3.00E+01	---	**7E-03**	7.01E-02	7.80E-06	**5E-07**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	---	2.51E-02	1.00E+00	---	**3E-02**	8.97E-03	4.90E-05	**4E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.15E-01	NA	---	---	4.10E-02	3.70E-05	**2E-06**
BROMOMETHANE	74-83-9	3.70E-01	N	---	8.45E-02	5.00E+00	---	**2E-02**	3.02E-02	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	---	1.05E-01	1.00E+02	---	**1E-03**	3.75E-02	6.00E-06	**2E-07**
CHLOROFORM	67-66-3	5.50E-01	Y	---	1.26E-01	9.77E+01	---	**1E-03**	4.48E-02	2.30E-05	**1E-06**
ETHYL ACETATE	141-78-6	1.62E+00	Y	---	3.70E-01	7.00E+01	---	**5E-03**	1.32E-01	-	**---**
ETHYLBENZENE	100-41-4	4.70E-01	Y	---	1.07E-01	1.00E+03	---	**1E-04**	3.83E-02	2.50E-06	**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.95E+00	N	---	4.45E-01	NA	---	---	1.59E-01	2.20E-05	**3E-06**
ISOPROPYL ALCOHOL	67-63-0	5.90E+00	Y	---	1.35E+00	2.00E+02	---	**7E-03**	4.81E-01	-	**---**
M,P-XYLENE	108-38-3	1.20E+00	Y	---	2.74E-01	1.00E+02	---	**3E-03**	9.78E-02	-	**---**
METHYLENE CHLORIDE	75-09-2	3.82E+00	Y	---	8.72E-01	6.00E+02	---	**1E-03**	3.11E-01	1.00E-08	M **3E-09**
NAPHTHALENE	91-20-3	4.65E-02	N	---	1.06E-02	3.00E+00	---	**4E-03**	3.79E-03	3.40E-05	**1E-07**
O-XYLENE	95-47-6	4.50E-01	Y	---	1.03E-01	1.00E+02	---	**1E-03**	3.67E-02	-	**---**
TETRACHLOROETHENE	127-18-4	1.90E+01	Y	---	4.34E+00	4.00E+01	---	**1E-01**	1.55E+00	2.60E-07	**4E-07**
TRICHLOROETHENE	79-01-6	5.80E-02	Y	---	1.32E-02	2.00E+00	---	**7E-03**	4.73E-03	4.10E-06	M **2E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	---	6.05E-02	2.00E+02	---	**3E-04**	2.16E-02	-	**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.48E-02	8.00E+01	---	**2E-04**	5.30E-03	4.40E-06	M **2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0011H**	**Total Inhalation**	**---**	**9E-01**	**4E-05**
		Based on NDs only	**0E+00**	**7E-01**	**4E-05**
		Based on Detects only	**#VALUE!**	**2E-01**	**3E-06**
		Site-related only	**0E+00**	**1E-01**	**5E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0011H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.82E+00	NA	NA	NA	3.11E-01	1.0E-08		---	---	---	3E-09	**3E-09**
TRICHLOROETHENE	79-01-6	5.80E-02	NA	NA	NA	4.73E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	5.80E-02	NA		4.73E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	5.30E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0012H**

Pathway:
Inhalation of Indoor Air

				RME child	RME adult				RME lifetime		
			TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)		8.15E-02		
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.17E-01	NA	---	---	4.20E-02	5.80E-05	**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.79E-02	2.00E+00	---	**2E-02**	1.35E-02	3.00E-05	**4E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	2.06E-02	3.00E+01	---	**7E-04**	7.34E-03	5.00E-06	**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05	**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.56E-01	2.00E+00	---	**2E-01**	1.27E-01	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	---	1.71E-01	6.00E+01	---	**3E-03**	6.12E-02	-	---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04	**3E-05**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	---	6.96E-02	7.00E+00	---	**1E-02**	2.49E-02	2.60E-05	**6E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06	**1E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	---	1.71E-01	6.00E+01	---	**3E-03**	6.12E-02	-	---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	---	2.06E-01	8.00E+02	---	**3E-04**	7.35E-02	1.10E-05	**8E-07**
BENZENE	71-43-2	6.39E-01	Y	---	1.46E-01	3.00E+01	---	**5E-03**	5.21E-02	7.80E-06	**4E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	2.19E-01	1.00E+00	---	**2E-01**	7.81E-02	4.90E-05	**4E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.15E-01	NA	---	---	4.10E-02	3.70E-05	**2E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	---	6.64E-02	5.00E+00	---	**1E-02**	2.37E-02	-	---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	1.08E-01	1.00E+02	---	**1E-03**	3.84E-02	6.00E-06	**2E-07**
CHLOROFORM	67-66-3	1.51E+00	Y	---	3.45E-01	9.77E+01	---	**4E-03**	1.23E-01	2.30E-05	**3E-06**
ETHYL ACETATE	141-78-6	6.48E+00	Y	---	1.48E+00	7.00E+01	---	**2E-02**	5.29E-01	-	---
ETHYLBENZENE	100-41-4	1.13E+00	Y	---	2.58E-01	1.00E+03	---	**3E-04**	9.20E-02	2.50E-06	**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.65E-01	NA	---	---	1.30E-01	2.20E-05	**3E-06**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	3.73E+00	Y	---	8.52E-01	1.00E+02	---	**9E-03**	3.04E-01	-	---
METHYLENE CHLORIDE	75-09-2	1.11E+00	Y	---	2.54E-01	6.00E+02	---	**4E-04**	9.06E-02	1.00E-08 M	**9E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	9.98E-01	Y	---	2.28E-01	1.00E+02	---	**2E-03**	8.14E-02	-	---
TETRACHLOROETHENE	127-18-4	2.58E+00	Y	---	5.89E-01	4.00E+01	---	**1E-02**	2.10E-01	2.60E-07	**5E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06 M	**8E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	---	8.03E-02	2.00E+02	---	**4E-04**	2.87E-02	-	---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.48E-02	8.00E+01	---	**2E-04**	5.30E-03	4.40E-06 M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0012H**	**Total Inhalation**	---	**1E+00**	**5E-05**
		Based on NDs only	**0E+00**	**1E+00**	**4E-05**
		Based on Detects only	**#VALUE!**	**6E-02**	**4E-06**
		Site-related only	**0E+00**	**4E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0012H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.11E+00	NA	NA	NA	9.06E-02	1.0E-08		---	---	---	9E-10	**9E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	2.04E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	5.30E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0013H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.17E-01	NA	---	---	4.20E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.79E-02	2.00E+00	---	**2E-02**	1.35E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	9.50E-02	N	---	2.17E-02	3.00E+01	---	**7E-04**	7.75E-03	5.00E-06		**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.56E-01	2.00E+00	---	**2E-01**	1.27E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	---	1.71E-01	6.00E+01	---	**3E-03**	6.12E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	1.30E-01	Y	---	2.97E-02	7.00E+00	---	**4E-03**	1.06E-02	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	---	1.71E-01	6.00E+01	---	**3E-03**	6.12E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	---	2.06E-01	8.00E+02	---	**3E-04**	7.35E-02	1.10E-05		**8E-07**
BENZENE	71-43-2	6.20E-01	Y	---	1.42E-01	3.00E+01	---	**5E-03**	5.06E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	2.19E-01	1.00E+00	---	**2E-01**	7.81E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.15E-01	NA	---	---	4.10E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	6.50E-01	N	---	1.48E-01	5.00E+00	---	**3E-02**	5.30E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	---	9.59E-02	1.00E+02	---	**1E-03**	3.42E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.50E-01	Y	---	7.99E-02	9.77E+01	---	**8E-04**	2.85E-02	2.30E-05		**7E-07**
ETHYL ACETATE	141-78-6	5.50E-01	N	---	1.26E-01	7.00E+01	---	**2E-03**	4.48E-02	-		---
ETHYLBENZENE	100-41-4	1.80E-01	Y	---	4.11E-02	1.00E+03	---	**4E-05**	1.47E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.65E-01	NA	---	---	1.30E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	2.10E+01	Y	---	4.79E+00	2.00E+02	---	**2E-02**	1.71E+00	-		---
M,P-XYLENE	108-38-3	1.52E+00	Y	---	3.47E-01	1.00E+02	---	**3E-03**	1.24E-01	-		---
METHYLENE CHLORIDE	75-09-2	2.40E+00	Y	---	5.48E-01	6.00E+02	---	**9E-04**	1.96E-01	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.40E-01	Y	---	3.20E-02	1.00E+02	---	**3E-04**	1.14E-02	-		---
TETRACHLOROETHENE	127-18-4	7.00E-02	Y	---	1.60E-02	4.00E+01	---	**4E-04**	5.71E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	3.00E+00	Y	---	6.85E-01	2.00E+02	---	**3E-03**	2.45E-01	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.48E-02	8.00E+01	---	**2E-04**	5.30E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0013H**	**Total Inhalation**	---	**1E+00**	**4E-05**
		Based on NDs only	**0E+00**	**1E+00**	**4E-05**
		Based on Detects only	**#VALUE!**	**4E-02**	**2E-06**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0013H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.40E+00	NA	NA	NA	1.96E-01	1.0E-08		---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	2.04E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	5.30E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0017H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.17E-01	NA	---	---	4.20E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.79E-02	2.00E+00	---	**2E-02**	1.35E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	2.05E-02	3.00E+01	---	**7E-04**	7.34E-03	5.00E-06		**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	9.83E-01	Y	---	2.24E-01	6.00E+01	---	**4E-03**	8.01E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	---	6.96E-02	7.00E+00	---	**1E-02**	2.49E-02	2.60E-05		**6E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	---	8.45E-02	6.00E+01	---	**1E-03**	3.02E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	---	1.03E-01	8.00E+02	---	**1E-04**	3.67E-02	1.10E-05		**4E-07**
BENZENE	71-43-2	8.00E-01	Y	---	1.83E-01	3.00E+01	---	**6E-03**	6.52E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.15E-01	NA	---	---	4.10E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	---	6.64E-02	5.00E+00	---	**1E-02**	2.37E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	1.08E-01	1.00E+02	---	**1E-03**	3.84E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.61E+00	Y	---	3.68E-01	9.77E+01	---	**4E-03**	1.31E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	3.30E+00	Y	---	7.53E-01	7.00E+01	---	**1E-02**	2.69E-01	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	---	7.43E-02	1.00E+03	---	**7E-05**	2.65E-02	2.50E-06		**7E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	2.04E+00	Y	---	4.66E-01	1.00E+02	---	**5E-03**	1.66E-01	-		---
METHYLENE CHLORIDE	75-09-2	8.33E-01	Y	---	1.90E-01	6.00E+02	---	**3E-04**	6.79E-02	1.00E-08	M	**7E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	---	7.43E-02	1.00E+02	---	**7E-04**	2.65E-02	-		---
TETRACHLOROETHENE	127-18-4	1.02E+01	Y	---	2.32E+00	4.00E+01	---	**6E-02**	8.29E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	3.92E-01	Y	---	8.95E-02	2.00E+00	---	**4E-02**	3.20E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	---	6.05E-02	2.00E+02	---	**3E-04**	2.16E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.48E-02	8.00E+01	---	**2E-04**	5.30E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0017H**	**Total Inhalation**	---	**7E-01**	**4E-05**
		Based on NDs only	**0E+00**	**6E-01**	**4E-05**
		Based on Detects only	**#VALUE!**	**1E-01**	**4E-06**
		Site-related only	**0E+00**	**1E-01**	**4E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0017H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.33E-01	NA	NA	NA	6.79E-02	1.0E-08		---	---	---	7E-10	**7E-10**
TRICHLOROETHENE	79-01-6	3.92E-01	NA	NA	NA	3.20E-02	1.0E-06	kidney	---	---	---	3E-08	**3E-08**
TRICHLOROETHENE	79-01-6	3.92E-01	NA		3.20E-02		3.1E-06	NHL+liver	---		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	5.30E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0018H**

Pathway:
Inhalation of Indoor Air

			RME child	RME adult			RME lifetime			
		TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-01	Y	---	5.48E-02	NA	---	---	1.96E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	4.30E-01	Y	---	9.82E-02	2.00E+00	---	**5E-02**	3.51E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	4.90E-01	Y	---	1.12E-01	3.00E+01	---	**4E-03**	4.00E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	4.60E+00	Y	---	1.05E+00	2.00E+00	---	**5E-01**	3.75E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	2.80E+00	Y	---	6.39E-01	6.00E+01	---	**1E-02**	2.28E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	9.40E-02	Y	---	2.15E-02	9.00E+00	---	**2E-03**	7.66E-03	6.00E-04		**5E-06**
1,2-DICHLOROETHANE	107-06-2	1.30E+00	Y	---	2.97E-01	7.00E+00	---	**4E-02**	1.06E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	9.00E-01	Y	---	2.05E-01	6.00E+01	---	**3E-03**	7.34E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.60E-01	Y	---	1.05E-01	8.00E+02	---	**1E-04**	3.75E-02	1.10E-05		**4E-07**
BENZENE	71-43-2	5.60E+00	Y	---	1.28E+00	3.00E+01	---	**4E-02**	4.57E-01	7.80E-06		**4E-06**
BENZYL CHLORIDE	100-44-7	8.40E-01	Y	---	1.92E-01	1.00E+00	---	**2E-01**	6.85E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	4.50E-01	Y	---	1.03E-01	NA	---	---	3.67E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	---	1.60E-01	5.00E+00	---	**3E-02**	5.71E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	---	1.05E-01	1.00E+02	---	**1E-03**	3.75E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	2.40E+00	Y	---	5.48E-01	9.77E+01	---	**6E-03**	1.96E-01	2.30E-05		**5E-06**
ETHYL ACETATE	141-78-6	4.68E+00	Y	---	1.07E+00	7.00E+01	---	**2E-02**	3.82E-01	-		**---**
ETHYLBENZENE	100-41-4	2.40E+00	Y	---	5.48E-01	1.00E+03	---	**5E-04**	1.96E-01	2.50E-06		**5E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	5.30E+00	Y	---	1.21E+00	NA	---	---	4.32E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL	67-63-0	1.30E+02	Y	---	2.97E+01	2.00E+02	---	**1E-01**	1.06E+01	-		**---**
M,P-XYLENE	108-38-3	1.00E+01	Y	---	2.28E+00	1.00E+02	---	**2E-02**	8.15E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	1.70E+00	Y	---	3.88E-01	6.00E+02	---	**6E-04**	1.39E-01	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	8.30E+00	Y	---	1.89E+00	3.00E+00	---	**6E-01**	6.77E-01	3.40E-05		**2E-05**
O-XYLENE	95-47-6	3.20E+00	Y	---	7.31E-01	1.00E+02	---	**7E-03**	2.61E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.40E+01	Y	---	3.20E+00	4.00E+01	---	**8E-02**	1.14E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	8.30E-01	Y	---	1.89E-01	2.00E+00	---	**9E-02**	6.77E-02	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	---	6.05E-02	2.00E+02	---	**3E-04**	2.16E-02	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.48E-02	8.00E+01	---	**2E-04**	5.30E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0018H**	**Total Inhalation**	**---**	**2E+00**	**6E-05**
		Based on NDs only	**0E+00**	**5E-01**	**7E-07**
		Based on Detects only	**#VALUE!**	**2E+00**	**6E-05**
		Site-related only	**0E+00**	**2E-01**	**8E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0018H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.70E+00	NA	NA	NA	1.39E-01	1.0E-08		---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	8.30E-01	NA	NA	NA	6.77E-02	1.0E-06	kidney	---	---	---	7E-08	**7E-08**
TRICHLOROETHENE	79-01-6	8.30E-01	NA		6.77E-02		3.1E-06	NHL+liver	---		2E-07		**2E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	5.30E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0023H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.17E-01	NA	---	---	4.20E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.79E-02	2.00E+00	---	**2E-02**	1.35E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	2.05E-02	3.00E+01	---	**7E-04**	7.34E-03	5.00E-06		**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.70E-01	N	---	8.45E-02	6.00E+01	---	**1E-03**	3.02E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	---	6.96E-02	7.00E+00	---	**1E-02**	2.49E-02	2.60E-05		**6E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	---	8.45E-02	6.00E+01	---	**1E-03**	3.02E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	---	1.03E-01	8.00E+02	---	**1E-04**	3.67E-02	1.10E-05		**4E-07**
BENZENE	71-43-2	1.40E+00	Y	---	3.20E-01	3.00E+01	---	**1E-02**	1.14E-01	7.80E-06		**9E-07**
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.15E-01	NA	---	---	4.10E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	---	6.64E-02	5.00E+00	---	**1E-02**	2.37E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	1.08E-01	1.00E+02	---	**1E-03**	3.84E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.66E-01	N	---	8.36E-02	9.77E+01	---	**9E-04**	2.98E-02	2.30E-05		**7E-07**
ETHYL ACETATE	141-78-6	2.70E-01	N	---	6.17E-02	7.00E+01	---	**9E-04**	2.20E-02	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	---	7.43E-02	1.00E+03	---	**7E-05**	2.65E-02	2.50E-06		**7E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	2.30E+00	Y	---	5.25E-01	1.00E+02	---	**5E-03**	1.88E-01	-		---
METHYLENE CHLORIDE	75-09-2	6.40E-01	Y	---	1.46E-01	6.00E+02	---	**2E-04**	5.22E-02	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	6.94E-01	Y	---	1.59E-01	1.00E+02	---	**2E-03**	5.66E-02	-		---
TETRACHLOROETHENE	127-18-4	1.40E+00	Y	---	3.20E-01	4.00E+01	---	**8E-03**	1.14E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	1.35E-01	N	---	3.08E-02	2.00E+00	---	**2E-02**	1.10E-02	4.10E-06	M	**5E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	---	6.05E-02	2.00E+02	---	**3E-04**	2.16E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.48E-02	8.00E+01	---	**2E-04**	5.30E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0023H**	**Total Inhalation**	---	**6E-01**	**4E-05**
		Based on NDs only	**0E+00**	**6E-01**	**4E-05**
		Based on Detects only	**#VALUE!**	**3E-02**	**9E-07**
		Site-related only	**0E+00**	**2E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0023H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.40E-01	NA	NA	NA	5.22E-02	1.0E-08		---	---	---	5E-10	**5E-10**
TRICHLOROETHENE	79-01-6	1.35E-01	NA	NA	NA	1.10E-02	1.0E-06	kidney	---	---	---	1E-08	**1E-08**
TRICHLOROETHENE	79-01-6	1.35E-01	NA		1.10E-02		3.1E-06	NHL+liver	---		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	5.30E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0025H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.17E-01	NA	---	---	4.20E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.79E-02	2.00E+00	---	**2E-02**	1.35E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	2.34E+00	Y	---	5.34E-01	3.00E+01	---	**2E-02**	1.91E-01	5.00E-06		**1E-06**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.56E-01	2.00E+00	---	**2E-01**	1.27E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.60E-01	Y	---	5.94E-02	6.00E+01	---	**1E-03**	2.12E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	3.30E-01	Y	---	7.53E-02	7.00E+00	---	**1E-02**	2.69E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	---	1.71E-01	6.00E+01	---	**3E-03**	6.12E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	2.10E+00	Y	---	4.79E-01	8.00E+02	---	**6E-04**	1.71E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	8.30E-01	Y	---	1.89E-01	3.00E+01	---	**6E-03**	6.77E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	2.19E-01	1.00E+00	---	**2E-01**	7.81E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.15E-01	NA	---	---	4.10E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.83E-01	5.00E+00	---	**4E-02**	6.52E-02	-		---
CARBON TETRACHLORIDE	56-23-5	5.60E-01	Y	---	1.28E-01	1.00E+02	---	**1E-03**	4.57E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	1.90E+00	Y	---	4.34E-01	9.77E+01	---	**4E-03**	1.55E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	3.90E+00	Y	---	8.90E-01	7.00E+01	---	**1E-02**	3.18E-01	-		---
ETHYLBENZENE	100-41-4	2.10E-01	Y	---	4.79E-02	1.00E+03	---	**5E-05**	1.71E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.65E-01	NA	---	---	1.30E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	7.70E+00	Y	---	1.76E+00	2.00E+02	---	**9E-03**	6.28E-01	-		---
M,P-XYLENE	108-38-3	1.30E+00	Y	---	2.97E-01	1.00E+02	---	**3E-03**	1.06E-01	-		---
METHYLENE CHLORIDE	75-09-2	3.33E+00	Y	---	7.61E-01	6.00E+02	---	**1E-03**	2.72E-01	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	8.80E-02	Y	---	2.01E-02	3.00E+00	---	**7E-03**	7.18E-03	3.40E-05		**2E-07**
O-XYLENE	95-47-6	3.10E-01	Y	---	7.08E-02	1.00E+02	---	**7E-04**	2.53E-02	-		---
TETRACHLOROETHENE	127-18-4	4.40E-01	Y	---	1.00E-01	4.00E+01	---	**3E-03**	3.59E-02	2.60E-07		**9E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	---	8.03E-02	2.00E+02	---	**4E-04**	2.87E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.48E-02	8.00E+01	---	**2E-04**	5.30E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0025H**	**Total Inhalation**	---	**1E+00**	**5E-05**
		Based on NDs only	**0E+00**	**1E+00**	**4E-05**
		Based on Detects only	**#VALUE!**	**8E-02**	**8E-06**
		Site-related only	**0E+00**	**5E-02**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0025H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.33E+00	NA	NA	NA	2.72E-01	1.0E-08		---	---	---	3E-09	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	2.04E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	5.30E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0026H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.17E-01	NA	---	---	4.20E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.79E-02	2.00E+00	---	**2E-02**	1.35E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	2.60E-01	Y	---	5.94E-02	3.00E+01	---	**2E-03**	2.12E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.80E-01	Y	---	2.01E-01	2.00E-01	---	**1E+00**	7.18E-02	1.60E-05		**1E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.56E-01	2.00E+00	---	**2E-01**	1.27E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E+00	Y	---	3.65E-01	6.00E+01	---	**6E-03**	1.30E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	3.00E+00	Y	---	6.85E-01	7.00E+00	---	**1E-01**	2.45E-01	2.60E-05		**6E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	2.50E-01	Y	---	5.71E-02	6.00E+01	---	**1E-03**	2.04E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	8.40E-02	Y	---	1.92E-02	8.00E+02	---	**2E-05**	6.85E-03	1.10E-05		**8E-08**
BENZENE	71-43-2	7.70E-01	Y	---	1.76E-01	3.00E+01	---	**6E-03**	6.28E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	2.19E-01	1.00E+00	---	**2E-01**	7.81E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	6.10E-01	Y	---	1.39E-01	NA	---	---	4.97E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.83E-01	5.00E+00	---	**4E-02**	6.52E-02	-		---
CARBON TETRACHLORIDE	56-23-5	5.20E-01	Y	---	1.19E-01	1.00E+02	---	**1E-03**	4.24E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	2.60E+00	Y	---	5.94E-01	9.77E+01	---	**6E-03**	2.12E-01	2.30E-05		**5E-06**
ETHYL ACETATE	141-78-6	5.10E+00	Y	---	1.16E+00	7.00E+01	---	**2E-02**	4.16E-01	-		---
ETHYLBENZENE	100-41-4	2.30E+00	Y	---	5.25E-01	1.00E+03	---	**5E-04**	1.88E-01	2.50E-06		**5E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.65E-01	NA	---	---	1.30E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	2.90E+01	Y	---	6.62E+00	2.00E+02	---	**3E-02**	2.36E+00	-		---
M,P-XYLENE	108-38-3	9.12E+00	Y	---	2.08E+00	1.00E+02	---	**2E-02**	7.44E-01	-		---
METHYLENE CHLORIDE	75-09-2	2.22E+00	Y	---	5.07E-01	6.00E+02	---	**8E-04**	1.81E-01	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	3.00E-02	N	---	6.85E-03	3.00E+00	---	**2E-03**	2.45E-03	3.40E-05		**8E-08**
O-XYLENE	95-47-6	2.10E+00	Y	---	4.79E-01	1.00E+02	---	**5E-03**	1.71E-01	-		---
TETRACHLOROETHENE	127-18-4	1.20E+01	Y	---	2.74E+00	4.00E+01	---	**7E-02**	9.78E-01	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	Y	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	---	8.03E-02	2.00E+02	---	**4E-04**	2.87E-02	-		---
VINYL CHLORIDE	75-01-4	1.60E-02	Y	---	3.65E-03	8.00E+01	---	**5E-05**	1.30E-03	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0026H**	**Total Inhalation**	---	**2E+00**	**6E-05**
		Based on NDs only	**0E+00**	**5E-01**	**4E-05**
		Based on Detects only	**#VALUE!**	**1E+00**	**2E-05**
		Site-related only	**0E+00**	**1E-01**	**4E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0026H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.22E+00	NA	NA	NA	1.81E-01	1.0E-08		---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	2.04E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	1.60E-02	NA	NA	NA	1.30E-03	4.4E-06		---	---	---	6E-09	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0027H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.17E-01	NA	---	---	4.20E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.79E-02	2.00E+00	---	**2E-02**	1.35E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	2.06E-02	3.00E+01	---	**7E-04**	7.34E-03	5.00E-06		**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.56E-01	2.00E+00	---	**2E-01**	1.27E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	---	1.71E-01	6.00E+01	---	**3E-03**	6.12E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	3.11E+00	Y	---	7.11E-01	7.00E+00	---	**1E-01**	2.54E-01	2.60E-05		**7E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	---	1.71E-01	6.00E+01	---	**3E-03**	6.12E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	3.42E+00	Y	---	7.82E-01	8.00E+02	---	**1E-03**	2.79E-01	1.10E-05		**3E-06**
BENZENE	71-43-2	7.34E-01	Y	---	1.68E-01	3.00E+01	---	**6E-03**	5.99E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	2.19E-01	1.00E+00	---	**2E-01**	7.81E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.15E-01	NA	---	---	4.10E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	---	6.64E-02	5.00E+00	---	**1E-02**	2.37E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	1.08E-01	1.00E+02	---	**1E-03**	3.84E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.66E-01	N	---	8.36E-02	9.77E+01	---	**9E-04**	2.98E-02	2.30E-05		**7E-07**
ETHYL ACETATE	141-78-6	1.10E+00	Y	---	2.51E-01	7.00E+01	---	**4E-03**	8.97E-02	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	---	7.43E-02	1.00E+03	---	**7E-05**	2.65E-02	2.50E-06		**7E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.65E-01	NA	---	---	1.30E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.35E+00	Y	---	3.08E-01	1.00E+02	---	**3E-03**	1.10E-01	-		---
METHYLENE CHLORIDE	75-09-2	1.25E+00	Y	---	2.85E-01	6.00E+02	---	**5E-04**	1.02E-01	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	---	7.43E-02	1.00E+02	---	**7E-04**	2.65E-02	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	---	8.03E-02	2.00E+02	---	**4E-04**	2.87E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.48E-02	8.00E+01	---	**2E-04**	5.30E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0027H**	**Total Inhalation**	---	**1E+00**	**5E-05**
		Based on NDs only	**0E+00**	**1E+00**	**4E-05**
		Based on Detects only	**#VALUE!**	**1E-01**	**1E-05**
		Site-related only	**0E+00**	**3E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0027H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.25E+00	NA	NA	NA	1.02E-01	1.0E-08		---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	2.04E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	5.30E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0029H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.17E-01	NA	---	---	4.20E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.79E-02	2.00E+00	---	**2E-02**	1.35E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	2.80E-01	Y	---	6.39E-02	3.00E+01	---	**2E-03**	2.28E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.56E-01	2.00E+00	---	**2E-01**	1.27E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E-01	Y	---	3.65E-02	6.00E+01	---	**6E-04**	1.30E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	7.90E-02	Y	---	1.80E-02	7.00E+00	---	**3E-03**	6.44E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	---	1.71E-01	6.00E+01	---	**3E-03**	6.12E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	---	2.06E-01	8.00E+02	---	**3E-04**	7.35E-02	1.10E-05		**8E-07**
BENZENE	71-43-2	1.31E+00	Y	---	2.99E-01	3.00E+01	---	**1E-02**	1.07E-01	7.80E-06		**8E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	2.19E-01	1.00E+00	---	**2E-01**	7.81E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.15E-01	NA	---	---	4.10E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	---	1.60E-01	5.00E+00	---	**3E-02**	5.71E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	---	9.13E-02	1.00E+02	---	**9E-04**	3.26E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.00E+00	Y	---	2.28E-01	9.77E+01	---	**2E-03**	8.15E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	5.50E-01	N	---	1.26E-01	7.00E+01	---	**2E-03**	4.48E-02	-		---
ETHYLBENZENE	100-41-4	1.80E-01	Y	---	4.11E-02	1.00E+03	---	**4E-05**	1.47E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.65E-01	NA	---	---	1.30E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	1.70E+01	Y	---	3.88E+00	2.00E+02	---	**2E-02**	1.39E+00	-		---
M,P-XYLENE	108-38-3	2.21E+00	Y	---	5.05E-01	1.00E+02	---	**5E-03**	1.80E-01	-		---
METHYLENE CHLORIDE	75-09-2	1.91E+01	Y	---	4.36E+00	6.00E+02	---	**7E-03**	1.56E+00	1.00E-08	M	**2E-08**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.80E-01	Y	---	4.11E-02	1.00E+02	---	**4E-04**	1.47E-02	-		---
TETRACHLOROETHENE	127-18-4	6.58E+00	Y	---	1.50E+00	4.00E+01	---	**4E-02**	5.37E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	3.70E-02	Y	---	8.45E-03	2.00E+00	---	**4E-03**	3.02E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	---	8.03E-02	2.00E+02	---	**4E-04**	2.87E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.48E-02	8.00E+01	---	**2E-04**	5.30E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0029H**	**Total Inhalation**	---	**1E+00**	**5E-05**
		Based on NDs only	**0E+00**	**1E+00**	**4E-05**
		Based on Detects only	**#VALUE!**	**9E-02**	**3E-06**
		Site-related only	**0E+00**	**4E-02**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0029H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.91E+01	NA	NA	NA	1.56E+00	1.0E-08		---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	3.70E-02	NA	NA	NA	3.02E-03	1.0E-06	kidney	---	---	---	3E-09	**3E-09**
TRICHLOROETHENE	79-01-6	3.70E-02	NA		3.02E-03		3.1E-06	NHL+liver	---		9E-09		**9E-09**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	5.30E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0030H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.17E-01	NA	---	---	4.20E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.79E-02	2.00E+00	---	**2E-02**	1.35E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	---	2.54E-01	2.00E+00	---	**1E-01**	9.07E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.21E+00	Y	---	5.05E-01	6.00E+01	---	**8E-03**	1.80E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	9.30E-01	Y	---	2.12E-01	7.00E+00	---	**3E-02**	7.59E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	9.00E-01	Y	---	2.05E-01	6.00E+01	---	**3E-03**	7.34E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	---	1.03E-01	8.00E+02	---	**1E-04**	3.67E-02	1.10E-05		**4E-07**
BENZENE	71-43-2	1.12E+00	Y	---	2.55E-01	3.00E+01	---	**9E-03**	9.11E-02	7.80E-06		**7E-07**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	---	1.83E-01	1.00E+00	---	**2E-01**	6.52E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.15E-01	NA	---	---	4.10E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	---	6.64E-02	5.00E+00	---	**1E-02**	2.37E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	1.08E-01	1.00E+02	---	**1E-03**	3.84E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.66E-01	N	---	8.36E-02	9.77E+01	---	**9E-04**	2.98E-02	2.30E-05		**7E-07**
ETHYL ACETATE	141-78-6	3.70E+00	Y	---	8.45E-01	7.00E+01	---	**1E-02**	3.02E-01	-		---
ETHYLBENZENE	100-41-4	1.13E+00	Y	---	2.58E-01	1.00E+03	---	**3E-04**	9.20E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.65E-01	NA	---	---	1.30E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	4.80E+00	Y	---	1.10E+00	1.00E+02	---	**1E-02**	3.91E-01	-		---
METHYLENE CHLORIDE	75-09-2	1.11E+00	Y	---	2.54E-01	6.00E+02	---	**4E-04**	9.06E-02	1.00E-08	M	**9E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.60E+00	Y	---	3.65E-01	1.00E+02	---	**4E-03**	1.30E-01	-		---
TETRACHLOROETHENE	127-18-4	5.90E+00	Y	---	1.35E+00	4.00E+01	---	**3E-02**	4.81E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	4.05E-01	N	---	9.25E-02	2.00E+00	---	**5E-02**	3.30E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	---	6.05E-02	2.00E+02	---	**3E-04**	2.16E-02	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	---	4.37E-02	8.00E+01	---	**5E-04**	1.56E-02	4.40E-06	M	**7E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0030H**	**Total Inhalation**	---	**1E+00**	**4E-05**
		Based on NDs only	**0E+00**	**9E-01**	**4E-05**
		Based on Detects only	**#VALUE!**	**1E-01**	**3E-06**
		Site-related only	**0E+00**	**8E-02**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0030H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.11E+00	NA	NA	NA	9.06E-02	1.0E-08		---	---	---	9E-10	**9E-10**
TRICHLOROETHENE	79-01-6	4.05E-01	NA	NA	NA	3.30E-02	1.0E-06	kidney	---	---	---	3E-08	**3E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	NA		3.30E-02		3.1E-06	NHL+liver	---		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	1.92E-01	NA	NA	NA	1.56E-02	4.4E-06		---	---	---	7E-08	**7E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0036H**

Pathway:
Inhalation of Indoor Air

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)		8.15E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.17E-01	NA	---	---	4.20E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.79E-02	2.00E+00	---	**2E-02**	1.35E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	---	2.54E-01	2.00E+00	---	**1E-01**	9.07E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.70E-01	N	---	8.45E-02	6.00E+01	---	**1E-03**	3.02E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	---	6.96E-02	7.00E+00	---	**1E-02**	2.49E-02	2.60E-05		**6E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	---	8.45E-02	6.00E+01	---	**1E-03**	3.02E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	---	1.03E-01	8.00E+02	---	**1E-04**	3.67E-02	1.10E-05		**4E-07**
BENZENE	71-43-2	1.15E+00	Y	---	2.62E-01	3.00E+01	---	**9E-03**	9.37E-02	7.80E-06		**7E-07**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	---	1.83E-01	1.00E+00	---	**2E-01**	6.52E-02	4.90E-05		**3E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.15E-01	NA	---	---	4.10E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	---	6.64E-02	5.00E+00	---	**1E-02**	2.37E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	1.08E-01	1.00E+02	---	**1E-03**	3.84E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.10E+00	Y	---	2.51E-01	9.77E+01	---	**3E-03**	8.97E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	6.12E+00	Y	---	1.40E+00	7.00E+01	---	**2E-02**	4.99E-01	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	---	7.43E-02	1.00E+03	---	**7E-05**	2.65E-02	2.50E-06		**7E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.65E-01	NA	---	---	1.30E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	8.30E-01	Y	---	1.89E-01	1.00E+02	---	**2E-03**	6.77E-02	-		---
METHYLENE CHLORIDE	75-09-2	1.10E+00	Y	---	2.51E-01	6.00E+02	---	**4E-04**	8.97E-02	1.00E-08	M	**9E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	---	7.43E-02	1.00E+02	---	**7E-04**	2.65E-02	-		---
TETRACHLOROETHENE	127-18-4	3.60E+00	Y	---	8.22E-01	4.00E+01	---	**2E-02**	2.94E-01	2.60E-07		**8E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	N	---	9.25E-02	2.00E+00	---	**5E-02**	3.30E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	---	6.05E-02	2.00E+02	---	**3E-04**	2.16E-02	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	---	4.37E-02	8.00E+01	---	**5E-04**	1.56E-02	4.40E-06	M	**7E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0036H**	**Total Inhalation**	---	**1E+00**	**4E-05**
		Based on NDs only	**0E+00**	**9E-01**	**4E-05**
		Based on Detects only	**#VALUE!**	**5E-02**	**3E-06**
		Site-related only	**0E+00**	**7E-02**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0036H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.10E+00	NA	NA	NA	8.97E-02	1.0E-08		---	---	---	9E-10	**9E-10**
TRICHLOROETHENE	79-01-6	4.05E-01	NA	NA	NA	3.30E-02	1.0E-06	kidney	---	---	---	3E-08	**3E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	NA		3.30E-02		3.1E-06	NHL+liver	---		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	1.92E-01	NA	NA	NA	1.56E-02	4.4E-06		---	---	---	7E-08	**7E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0037H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-01	Y	---	2.51E-02	NA	---	---	8.97E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	3.00E-01	Y	---	6.85E-02	2.00E+00	---	**3E-02**	2.45E-02	3.00E-05		**7E-07**
1,4-DIOXANE	123-91-1	1.70E+00	Y	---	3.88E-01	3.00E+01	---	**1E-02**	1.39E-01	5.00E-06		**7E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.60E+00	N	---	3.65E-01	2.00E+00	---	**2E-01**	1.30E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.40E+00	Y	---	1.23E+00	6.00E+01	---	**2E-02**	4.40E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	7.00E+00	Y	---	1.60E+00	7.00E+00	---	**2E-01**	5.71E-01	2.60E-05		**1E-05**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.20E+00	Y	---	2.74E-01	6.00E+01	---	**5E-03**	9.78E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	---	1.03E-01	8.00E+02	---	**1E-04**	3.67E-02	1.10E-05		**4E-07**
BENZENE	71-43-2	3.70E+00	Y	---	8.45E-01	3.00E+01	---	**3E-02**	3.02E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	1.20E-01	N	---	2.74E-02	1.00E+00	---	**3E-02**	9.78E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	5.70E-01	Y	---	1.30E-01	NA	---	---	4.65E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	4.00E-01	N	---	9.13E-02	5.00E+00	---	**2E-02**	3.26E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.50E-01	Y	---	1.26E-01	1.00E+02	---	**1E-03**	4.48E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	3.20E+00	Y	---	7.31E-01	9.77E+01	---	**7E-03**	2.61E-01	2.30E-05		**6E-06**
ETHYL ACETATE	141-78-6	2.40E+00	Y	---	5.48E-01	7.00E+01	---	**8E-03**	1.96E-01	-		**---**
ETHYLBENZENE	100-41-4	3.80E+00	Y	---	8.68E-01	1.00E+03	---	**9E-04**	3.10E-01	2.50E-06		**8E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	2.15E+00	N	---	4.91E-01	NA	---	---	1.75E-01	2.20E-05		**4E-06**
ISOPROPYL ALCOHOL	67-63-0	7.50E+01	Y	---	1.71E+01	2.00E+02	---	**9E-02**	6.12E+00	-		**---**
M,P-XYLENE	108-38-3	1.60E+01	Y	---	3.65E+00	1.00E+02	---	**4E-02**	1.30E+00	-		**---**
METHYLENE CHLORIDE	75-09-2	8.20E-01	Y	---	1.87E-01	6.00E+02	---	**3E-04**	6.69E-02	1.00E-08	M	**7E-10**
NAPHTHALENE	91-20-3	7.20E-02	Y	---	1.64E-02	3.00E+00	---	**5E-03**	5.87E-03	3.40E-05		**2E-07**
O-XYLENE	95-47-6	5.60E+00	Y	---	1.28E+00	1.00E+02	---	**1E-02**	4.57E-01	-		**---**
TETRACHLOROETHENE	127-18-4	8.70E+00	Y	---	1.99E+00	4.00E+01	---	**5E-02**	7.09E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	1.00E-01	Y	---	2.28E-02	2.00E+00	---	**1E-02**	8.15E-03	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	---	6.05E-02	2.00E+02	---	**3E-04**	2.16E-02	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.48E-02	8.00E+01	---	**2E-04**	5.30E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0037H**	**Total Inhalation**	**---**	**1E+00**	**6E-05**
		Based on NDs only	**0E+00**	**7E-01**	**3E-05**
		Based on Detects only	**#VALUE!**	**5E-01**	**3E-05**
		Site-related only	**0E+00**	**7E-02**	**9E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0037H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.20E-01	NA	NA	NA	6.69E-02	1.0E-08		---	---	---	7E-10	**7E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	NA	NA	NA	8.15E-03	1.0E-06	kidney	---	---	---	8E-09	**8E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	NA		8.15E-03		3.1E-06	NHL+liver	---		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	5.30E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0038H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.17E-01	NA	---	---	4.20E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.79E-02	2.00E+00	---	**2E-02**	1.35E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	2.06E-02	3.00E+01	---	**7E-04**	7.34E-03	5.00E-06		**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.56E-01	2.00E+00	---	**2E-01**	1.27E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	---	1.71E-01	6.00E+01	---	**3E-03**	6.12E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	---	6.96E-02	7.00E+00	---	**1E-02**	2.49E-02	2.60E-05		**6E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	---	1.71E-01	6.00E+01	---	**3E-03**	6.12E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	---	2.06E-01	8.00E+02	---	**3E-04**	7.35E-02	1.10E-05		**8E-07**
BENZENE	71-43-2	5.11E-01	Y	---	1.17E-01	3.00E+01	---	**4E-03**	4.17E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	2.19E-01	1.00E+00	---	**2E-01**	7.81E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.15E-01	NA	---	---	4.10E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	---	6.64E-02	5.00E+00	---	**1E-02**	2.37E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	1.08E-01	1.00E+02	---	**1E-03**	3.84E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.42E+00	Y	---	3.23E-01	9.77E+01	---	**3E-03**	1.15E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	5.50E-01	N	---	1.26E-01	7.00E+01	---	**2E-03**	4.48E-02	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	---	7.43E-02	1.00E+03	---	**7E-05**	2.65E-02	2.50E-06		**7E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.65E-01	NA	---	---	1.30E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.30E+00	Y	---	2.97E-01	1.00E+02	---	**3E-03**	1.06E-01	-		---
METHYLENE CHLORIDE	75-09-2	3.12E+00	Y	---	7.13E-01	6.00E+02	---	**1E-03**	2.55E-01	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	---	7.43E-02	1.00E+02	---	**7E-04**	2.65E-02	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	---	8.03E-02	2.00E+02	---	**4E-04**	2.87E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.48E-02	8.00E+01	---	**2E-04**	5.30E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0038H**	**Total Inhalation**	---	**1E+00**	**5E-05**
		Based on NDs only	**0E+00**	**1E+00**	**4E-05**
		Based on Detects only	**#VALUE!**	**1E-02**	**3E-06**
		Site-related only	**0E+00**	**3E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0038H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.12E+00	NA	NA	NA	2.55E-01	1.0E-08		---	---	---	3E-09	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	2.04E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	5.30E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0040H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.17E-01	NA	---	---	4.20E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.44E+00	Y	---	3.28E-01	2.00E+00	---	**2E-01**	1.17E-01	3.00E-05		**4E-06**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	2.05E-02	3.00E+01	---	**7E-04**	7.34E-03	5.00E-06		**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.10E+00	Y	---	9.36E-01	6.00E+01	---	**2E-02**	3.34E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	---	6.96E-02	7.00E+00	---	**1E-02**	2.49E-02	2.60E-05		**6E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.10E+00	Y	---	2.51E-01	6.00E+01	---	**4E-03**	8.97E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	---	1.03E-01	8.00E+02	---	**1E-04**	3.67E-02	1.10E-05		**4E-07**
BENZENE	71-43-2	2.60E+00	Y	---	5.94E-01	3.00E+01	---	**2E-02**	2.12E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.15E-01	NA	---	---	4.10E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	---	6.64E-02	5.00E+00	---	**1E-02**	2.37E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	---	1.08E-01	1.00E+02	---	**1E-03**	3.84E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	4.80E+00	Y	---	1.10E+00	9.77E+01	---	**1E-02**	3.91E-01	2.30E-05		**9E-06**
ETHYL ACETATE	141-78-6	1.30E+00	Y	---	2.97E-01	7.00E+01	---	**4E-03**	1.06E-01	-		---
ETHYLBENZENE	100-41-4	2.20E+00	Y	---	5.02E-01	1.00E+03	---	**5E-04**	1.79E-01	2.50E-06		**4E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	7.90E+00	Y	---	1.80E+00	1.00E+02	---	**2E-02**	6.44E-01	-		---
METHYLENE CHLORIDE	75-09-2	2.60E+02	Y	---	5.94E+01	6.00E+02	---	**1E-01**	2.12E+01	1.00E-08	M	**2E-07**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.34E+00	Y	---	5.35E-01	1.00E+02	---	**5E-03**	1.91E-01	-		---
TETRACHLOROETHENE	127-18-4	1.53E+02	Y	---	3.50E+01	4.00E+01	---	**9E-01**	1.25E+01	2.60E-07		**3E-06**
TRICHLOROETHENE	79-01-6	1.26E+01	Y	---	2.88E+00	2.00E+00	---	**1E+00**	1.03E+00	4.10E-06	M	**4E-06**
VINYL ACETATE	108-05-4	2.65E-01	N	---	6.05E-02	2.00E+02	---	**3E-04**	2.16E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.48E-02	8.00E+01	---	**2E-04**	5.30E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0040H**	**Total Inhalation**	---	**3E+00**	**6E-05**
		Based on NDs only	**0E+00**	**5E-01**	**4E-05**
		Based on Detects only	**#VALUE!**	**3E+00**	**2E-05**
		Site-related only	**0E+00**	**2E+00**	**8E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0040H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.60E+02	NA	NA	NA	2.12E+01	1.0E-08		---	---	---	2E-07	**2E-07**
TRICHLOROETHENE	79-01-6	1.26E+01	NA	NA	NA	1.03E+00	1.0E-06	kidney	---	---	---	1E-06	**1E-06**
TRICHLOROETHENE	79-01-6	1.26E+01	NA		1.03E+00		3.1E-06	NHL+liver	---		3E-06		**3E-06**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	5.30E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0041H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	---	2.40E-03	NA	---	---	8.56E-04	5.80E-05		**5E-08**
1,3-BUTADIENE	106-99-0	4.90E-02	N	---	1.12E-02	2.00E+00	---	**6E-03**	4.00E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	7.00E-02	N	---	1.60E-02	3.00E+01	---	**5E-04**	5.71E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	---	1.60E-03	2.00E-01	---	**8E-03**	5.71E-04	1.60E-05		**9E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.80E-01	N	---	1.10E-01	2.00E+00	---	**5E-02**	3.91E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E-01	Y	---	3.20E-02	6.00E+01	---	**5E-04**	1.14E-02	-		---
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	---	7.53E-03	9.00E+00	---	**8E-04**	2.69E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	5.10E-01	Y	---	1.16E-01	7.00E+00	---	**2E-02**	4.16E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	---	2.05E-02	4.00E+00	---	**5E-03**	7.34E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	---	1.37E-02	6.00E+01	---	**2E-04**	4.89E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	---	1.14E-02	8.00E+02	---	**1E-05**	4.08E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	4.80E-01	Y	---	1.10E-01	3.00E+01	---	**4E-03**	3.91E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	---	1.94E-02	1.00E+00	---	**2E-02**	6.93E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	---	2.85E-02	NA	---	---	1.02E-02	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	6.50E-01	N	---	1.48E-01	5.00E+00	---	**3E-02**	5.30E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	---	9.82E-02	1.00E+02	---	**1E-03**	3.51E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	9.00E-01	Y	---	2.05E-01	9.77E+01	---	**2E-03**	7.34E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.40E-01	Y	---	3.20E-02	1.00E+03	---	**3E-05**	1.14E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	---	1.48E-01	NA	---	---	5.30E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	2.70E+01	Y	---	6.16E+00	2.00E+02	---	**3E-02**	2.20E+00	-		---
M,P-XYLENE	108-38-3	4.00E-01	Y	---	9.13E-02	1.00E+02	---	**9E-04**	3.26E-02	-		---
METHYLENE CHLORIDE	75-09-2	3.20E-01	N	---	7.31E-02	6.00E+02	---	**1E-04**	2.61E-02	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.40E-01	Y	---	3.20E-02	1.00E+02	---	**3E-04**	1.14E-02	-		---
TETRACHLOROETHENE	127-18-4	4.60E+00	Y	---	1.05E+00	4.00E+01	---	**3E-02**	3.75E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.00E-03	N	---	1.83E-03	8.00E+01	---	**2E-05**	6.52E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0041H**	**Total Inhalation**	---	**2E-01**	**7E-06**
		Based on NDs only	**0E+00**	**2E-01**	**4E-06**
		Based on Detects only	**#VALUE!**	**8E-02**	**3E-06**
		Site-related only	**0E+00**	**6E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0041H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.20E-01	NA	NA	NA	2.61E-02	1.0E-08		---	---	---	3E-10	**3E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	2.04E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	8.00E-03	NA	NA	NA	6.52E-04	4.4E-06		---	---	---	3E-09	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0045S**

Pathway:
Inhalation of Indoor Air

			RME child	RME adult			RME lifetime		
		TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02		

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	2.50E-01	N	---	5.71E-02	7.00E+00	---	**8E-03**	2.04E-02	2.60E-05		**5E-07**
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	4.00E+01	Y	---	9.13E+00	4.00E+01	---	**2E-01**	3.26E+00	2.60E-07		**8E-07**
TRICHLOROETHENE	79-01-6	1.30E+00	Y	---	2.97E-01	2.00E+00	---	**1E-01**	1.06E-01	4.10E-06	M	**4E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	5.30E-01	Y	---	1.21E-01	8.00E+01	---	**2E-03**	4.32E-02	4.40E-06	M	**2E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0045S**	**Total Inhalation**	---	**4E-01**	**2E-06**
		Based on NDs only	**0E+00**	**8E-03**	**5E-07**
		Based on Detects only	**#VALUE!**	**4E-01**	**1E-06**
		Site-related only	**0E+00**	**4E-01**	**1E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0045S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	1.30E+00	NA	NA	NA	1.06E-01	1.0E-06	kidney	---	---	---	1E-07	**1E-07**
TRICHLOROETHENE	79-01-6	1.30E+00	NA		1.06E-01		3.1E-06	NHL+liver	---		3E-07		**3E-07**
VINYL CHLORIDE	75-01-4	5.30E-01	NA	NA	NA	4.32E-02	4.4E-06		---	---	---	2E-07	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0047H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	9.00E+00	Y	---	2.05E+00	4.00E+01	---	**5E-02**	7.34E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0047H**	**Total Inhalation**	---	**8E-02**	**3E-07**
		Based on NDs only	**0E+00**	**3E-02**	**8E-08**
		Based on Detects only	**#VALUE!**	**5E-02**	**2E-07**
		Site-related only	**0E+00**	**8E-02**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0047H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	2.04E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0050H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0050H**	**Total Inhalation**	---	**3E-02**	**9E-08**
		Based on NDs only	**0E+00**	**3E-02**	**9E-08**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**9E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0050H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	2.04E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0051H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.17E-01	NA	---	---	4.20E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.79E-02	2.00E+00	---	**2E-02**	1.35E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	2.20E-01	Y	---	5.02E-02	3.00E+01	---	**2E-03**	1.79E-02	5.00E-06		**9E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.20E+00	N	---	2.74E-01	2.00E+00	---	**1E-01**	9.78E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.80E-01	Y	---	1.78E-01	6.00E+01	---	**3E-03**	6.36E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	---	3.20E-02	7.00E+00	---	**5E-03**	1.14E-02	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	---	8.45E-02	6.00E+01	---	**1E-03**	3.02E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	2.10E-01	Y	---	4.79E-02	8.00E+02	---	**6E-05**	1.71E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	6.30E-01	Y	---	1.44E-01	3.00E+01	---	**5E-03**	5.14E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	2.35E-01	N	---	5.37E-02	1.00E+00	---	**5E-02**	1.92E-02	4.90E-05		**9E-07**
BROMODICHLOROMETHANE	75-27-4	3.60E-01	Y	---	8.22E-02	NA	---	---	2.94E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.83E-01	5.00E+00	---	**4E-02**	6.52E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	---	1.10E-01	1.00E+02	---	**1E-03**	3.91E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	2.10E+00	Y	---	4.79E-01	9.77E+01	---	**5E-03**	1.71E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	7.60E+00	Y	---	1.74E+00	7.00E+01	---	**2E-02**	6.20E-01	-		---
ETHYLBENZENE	100-41-4	9.50E-01	Y	---	2.17E-01	1.00E+03	---	**2E-04**	7.75E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	9.50E-01	N	---	2.17E-01	NA	---	---	7.75E-02	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	5.20E+02	Y	---	1.19E+02	2.00E+02	---	**6E-01**	4.24E+01	-		---
M,P-XYLENE	108-38-3	3.00E+00	Y	---	6.85E-01	1.00E+02	---	**7E-03**	2.45E-01	-		---
METHYLENE CHLORIDE	75-09-2	9.40E-01	Y	---	2.15E-01	6.00E+02	---	**4E-04**	7.66E-02	1.00E-08	M	**8E-10**
NAPHTHALENE	91-20-3	8.30E-02	Y	---	1.89E-02	3.00E+00	---	**6E-03**	6.77E-03	3.40E-05		**2E-07**
O-XYLENE	95-47-6	9.10E-01	Y	---	2.08E-01	1.00E+02	---	**2E-03**	7.42E-02	-		---
TETRACHLOROETHENE	127-18-4	4.02E+02	Y	---	9.18E+01	4.00E+01	---	**2E+00**	3.28E+01	2.60E-07		**9E-06**
TRICHLOROETHENE	79-01-6	6.00E-02	Y	---	1.37E-02	2.00E+00	---	**7E-03**	4.89E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	1.83E+00	Y	---	4.18E-01	2.00E+02	---	**2E-03**	1.49E-01	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.48E-02	8.00E+01	---	**2E-04**	5.30E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0051H**	**Total Inhalation**	---	**4E+00**	**5E-05**
		Based on NDs only	**0E+00**	**8E-01**	**4E-05**
		Based on Detects only	**#VALUE!**	**3E+00**	**2E-05**
		Site-related only	**0E+00**	**2E+00**	**9E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0051H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.40E-01	NA	NA	NA	7.66E-02	1.0E-08		---	---	---	8E-10	**8E-10**
TRICHLOROETHENE	79-01-6	6.00E-02	NA	NA	NA	4.89E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	6.00E-02	NA		4.89E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	5.30E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0052H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime		
	TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02		

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.90E+00	Y	---	4.34E-01	4.00E+01	---	**1E-02**	1.55E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0052H**	**Total Inhalation**	---	**4E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**8E-08**
		Based on Detects only	**#VALUE!**	**1E-02**	**4E-08**
		Site-related only	**0E+00**	**4E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0052H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	2.04E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0053H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.17E-01	NA	---	---	4.20E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.90E-01	Y	---	4.34E-02	2.00E+00	---	**2E-02**	1.55E-02	3.00E-05		**5E-07**
1,4-DIOXANE	123-91-1	2.10E-01	N	---	4.79E-02	3.00E+01	---	**2E-03**	1.71E-02	5.00E-06		**9E-08**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.45E+00	N	---	3.31E-01	2.00E+00	---	**2E-01**	1.18E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	6.10E-01	Y	---	1.39E-01	6.00E+01	---	**2E-03**	4.97E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	7.60E-02	Y	---	1.74E-02	7.00E+00	---	**2E-03**	6.20E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	---	8.45E-02	6.00E+01	---	**1E-03**	3.02E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	---	1.03E-01	8.00E+02	---	**1E-04**	3.67E-02	1.10E-05		**4E-07**
BENZENE	71-43-2	9.60E-01	Y	---	2.19E-01	3.00E+01	---	**7E-03**	7.83E-02	7.80E-06		**6E-07**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	---	2.51E-02	1.00E+00	---	**3E-02**	8.97E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.15E-01	NA	---	---	4.10E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	3.70E-01	N	---	8.45E-02	5.00E+00	---	**2E-02**	3.02E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	---	1.05E-01	1.00E+02	---	**1E-03**	3.75E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	8.78E-01	Y	---	2.01E-01	9.77E+01	---	**2E-03**	7.16E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	3.13E+00	Y	---	7.15E-01	7.00E+01	---	**1E-02**	2.55E-01	-		---
ETHYLBENZENE	100-41-4	3.30E+00	Y	---	7.53E-01	1.00E+03	---	**8E-04**	2.69E-01	2.50E-06		**7E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.95E+00	N	---	4.45E-01	NA	---	---	1.59E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	5.40E+00	Y	---	1.23E+00	2.00E+02	---	**6E-03**	4.40E-01	-		---
M,P-XYLENE	108-38-3	2.30E+00	Y	---	5.25E-01	1.00E+02	---	**5E-03**	1.88E-01	-		---
METHYLENE CHLORIDE	75-09-2	8.33E-01	Y	---	1.90E-01	6.00E+02	---	**3E-04**	6.79E-02	1.00E-08	M	**7E-10**
NAPHTHALENE	91-20-3	3.60E-02	Y	---	8.22E-03	3.00E+00	---	**3E-03**	2.94E-03	3.40E-05		**1E-07**
O-XYLENE	95-47-6	8.25E-01	Y	---	1.88E-01	1.00E+02	---	**2E-03**	6.72E-02	-		---
TETRACHLOROETHENE	127-18-4	2.41E+01	Y	---	5.50E+00	4.00E+01	---	**1E-01**	1.97E+00	2.60E-07		**5E-07**
TRICHLOROETHENE	79-01-6	4.70E-01	Y	---	1.07E-01	2.00E+00	---	**5E-02**	3.83E-02	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	---	6.05E-02	2.00E+02	---	**3E-04**	2.16E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.48E-02	8.00E+01	---	**2E-04**	5.30E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0053H**	**Total Inhalation**	---	**1E+00**	**4E-05**
		Based on NDs only	**0E+00**	**7E-01**	**4E-05**
		Based on Detects only	**#VALUE!**	**3E-01**	**5E-06**
		Site-related only	**0E+00**	**2E-01**	**8E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0053H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.33E-01	NA	NA	NA	6.79E-02	1.0E-08		---	---	---	7E-10	**7E-10**
TRICHLOROETHENE	79-01-6	4.70E-01	NA	NA	NA	3.83E-02	1.0E-06	kidney	---	---	---	4E-08	**4E-08**
TRICHLOROETHENE	79-01-6	4.70E-01	NA		3.83E-02		3.1E-06	NHL+liver	---		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	5.30E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0054H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	2.14E+01	Y	---	4.89E+00	4.00E+01	---	**1E-01**	1.74E+00	2.60E-07		**5E-07**
TRICHLOROETHENE	79-01-6	9.30E+00	Y	---	2.12E+00	2.00E+00	---	**1E+00**	7.58E-01	4.10E-06	M	**3E-06**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0054H**	**Total Inhalation**	---	**1E+00**	**4E-06**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**#VALUE!**	**1E+00**	**4E-06**
		Site-related only	**0E+00**	**1E+00**	**4E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0054H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	---
TRICHLOROETHENE	79-01-6	9.30E+00	NA	NA	NA	7.58E-01	1.0E-06	kidney	---	---	---	8E-07	**8E-07**
TRICHLOROETHENE	79-01-6	9.30E+00	NA		7.58E-01		3.1E-06	NHL+liver	---		2E-06		**2E-06**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	---

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0055H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.50E+00	Y	---	3.42E-01	4.00E+01	---	**9E-03**	1.22E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0055H**	**Total Inhalation**	---	**4E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**8E-08**
		Based on Detects only	**#VALUE!**	**9E-03**	**3E-08**
		Site-related only	**0E+00**	**4E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0055H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	2.04E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0056H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime		
	TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02		

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	6.90E+00	Y	---	1.58E+00	4.00E+01	---	**4E-02**	5.63E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0056H**	**Total Inhalation**	---	**7E-02**	**2E-07**
		Based on NDs only	**0E+00**	**3E-02**	**8E-08**
		Based on Detects only	**#VALUE!**	**4E-02**	**1E-07**
		Site-related only	**0E+00**	**7E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0056H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	2.04E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0057H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime		
	TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02		

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0057H**	**Total Inhalation**	---	**3E-02**	**9E-08**
		Based on NDs only	**0E+00**	**3E-02**	**9E-08**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**9E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0057H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	2.04E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0058H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0058H**	**Total Inhalation**	---	**3E-02**	**9E-08**
		Based on NDs only	**0E+00**	**3E-02**	**9E-08**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**9E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0058H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	2.04E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0059H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	7.00E-02	N	---	1.60E-02	NA	---	---	5.71E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	3.60E-01	Y	---	8.22E-02	2.00E+00	---	**4E-02**	2.94E-02	3.00E-05		**9E-07**
1,4-DIOXANE	123-91-1	4.70E+00	Y	---	1.07E+00	3.00E+01	---	**4E-02**	3.83E-01	5.00E-06		**2E-06**
1,1,2-TRICHLOROETHANE	79-00-5	4.95E-02	N	---	1.13E-02	2.00E-01	---	**6E-02**	4.04E-03	1.60E-05		**6E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.00E+00	Y	---	9.13E-01	2.00E+00	---	**5E-01**	3.26E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	6.10E-01	Y	---	1.39E-01	6.00E+01	---	**2E-03**	4.97E-02	-		---
1,2-DIBROMOETHANE	106-93-4	3.60E-02	N	---	8.22E-03	9.00E+00	---	**9E-04**	2.94E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	8.60E-02	Y	---	1.96E-02	7.00E+00	---	**3E-03**	7.01E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.60E+00	Y	---	3.65E-01	4.00E+00	---	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	1.45E-01	N	---	3.31E-02	6.00E+01	---	**6E-04**	1.18E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	1.80E-01	Y	---	4.11E-02	8.00E+02	---	**5E-05**	1.47E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	1.90E+00	Y	---	4.34E-01	3.00E+01	---	**1E-02**	1.55E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	1.50E-01	N	---	3.42E-02	1.00E+00	---	**3E-02**	1.22E-02	4.90E-05		**6E-07**
BROMODICHLOROMETHANE	75-27-4	2.30E-01	Y	---	5.25E-02	NA	---	---	1.88E-02	3.70E-05		**7E-07**
BROMOMETHANE	74-83-9	5.00E-01	N	---	1.14E-01	5.00E+00	---	**2E-02**	4.08E-02	-		---
CARBON TETRACHLORIDE	56-23-5	1.50E+00	Y	---	3.42E-01	1.00E+02	---	**3E-03**	1.22E-01	6.00E-06		**7E-07**
CHLOROFORM	67-66-3	1.70E+00	Y	---	3.88E-01	9.77E+01	---	**4E-03**	1.39E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	3.10E+00	Y	---	7.08E-01	7.00E+01	---	**1E-02**	2.53E-01	-		---
ETHYLBENZENE	100-41-4	7.40E-01	Y	---	1.69E-01	1.00E+03	---	**2E-04**	6.03E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.40E+00	Y	---	1.00E+00	NA	---	---	3.59E-01	2.20E-05		**8E-06**
ISOPROPYL ALCOHOL	67-63-0	8.00E+01	Y	---	1.83E+01	2.00E+02	---	**9E-02**	6.52E+00	-		---
M,P-XYLENE	108-38-3	3.00E+00	Y	---	6.85E-01	1.00E+02	---	**7E-03**	2.45E-01	-		---
METHYLENE CHLORIDE	75-09-2	9.10E-01	Y	---	2.08E-01	6.00E+02	---	**3E-04**	7.42E-02	1.00E-08	M	**7E-10**
NAPHTHALENE	91-20-3	1.00E-01	Y	---	2.28E-02	3.00E+00	---	**8E-03**	8.15E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	1.30E+00	Y	---	2.97E-01	1.00E+02	---	**3E-03**	1.06E-01	-		---
TETRACHLOROETHENE	127-18-4	2.20E+02	Y	---	5.03E+01	4.00E+01	---	**1E+00**	1.80E+01	2.60E-07		**5E-06**
TRICHLOROETHENE	79-01-6	1.24E+01	Y	---	2.82E+00	2.00E+00	---	**1E+00**	1.01E+00	4.10E-06	M	**4E-06**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	2.90E-02	N	---	6.62E-03	8.00E+01	---	**8E-05**	2.36E-03	4.40E-06	M	**1E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0059H**	**Total Inhalation**	---	**4E+00**	**3E-05**
		Based on NDs only	**0E+00**	**1E-01**	**3E-06**
		Based on Detects only	**#VALUE!**	**3E+00**	**3E-05**
		Site-related only	**0E+00**	**3E+00**	**1E-05**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0059H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.10E-01	NA	NA	NA	7.42E-02	1.0E-08		---	---	---	7E-10	**7E-10**
TRICHLOROETHENE	79-01-6	1.24E+01	NA	NA	NA	1.01E+00	1.0E-06	kidney	---	---	---	1E-06	**1E-06**
TRICHLOROETHENE	79-01-6	1.24E+01	NA		1.01E+00		3.1E-06	NHL+liver	---		3E-06		**3E-06**
VINYL CHLORIDE	75-01-4	2.90E-02	NA	NA	NA	2.36E-03	4.4E-06		---	---	---	1E-08	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0060H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime	
	TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02	

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0060H**	**Total Inhalation**	---	**3E-02**	**9E-08**
		Based on NDs only	**0E+00**	**3E-02**	**9E-08**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**9E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0060H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	2.04E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0061H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime	
	TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02	

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0061H**	**Total Inhalation**	---	**3E-02**	**9E-08**
		Based on NDs only	**0E+00**	**3E-02**	**9E-08**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**9E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0061H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	2.04E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0062H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	---	2.40E-03	NA	---	---	8.56E-04	5.80E-05		**5E-08**
1,3-BUTADIENE	106-99-0	4.95E-02	N	---	1.13E-02	2.00E+00	---	**6E-03**	4.04E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	7.00E-02	N	---	1.60E-02	3.00E+01	---	**5E-04**	5.71E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	---	1.60E-03	2.00E-01	---	**8E-03**	5.71E-04	1.60E-05		**9E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.85E-01	N	---	1.11E-01	2.00E+00	---	**6E-02**	3.95E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.40E-01	Y	---	5.48E-02	6.00E+01	---	**9E-04**	1.96E-02	-		---
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	---	7.53E-03	9.00E+00	---	**8E-04**	2.69E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	1.70E-01	Y	---	3.88E-02	7.00E+00	---	**6E-03**	1.39E-02	2.60E-05		**4E-07**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	---	2.05E-02	4.00E+00	---	**5E-03**	7.34E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	---	1.37E-02	6.00E+01	---	**2E-04**	4.89E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	---	1.14E-02	8.00E+02	---	**1E-05**	4.08E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	1.00E+00	Y	---	2.28E-01	3.00E+01	---	**8E-03**	8.15E-02	7.80E-06		**6E-07**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	---	1.94E-02	1.00E+00	---	**2E-02**	6.93E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	---	2.85E-02	NA	---	---	1.02E-02	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	6.50E-01	N	---	1.48E-01	5.00E+00	---	**3E-02**	5.30E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	---	9.13E-02	1.00E+02	---	**9E-04**	3.26E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.40E-01	Y	---	7.76E-02	9.77E+01	---	**8E-04**	2.77E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	3.00E-01	Y	---	6.85E-02	1.00E+03	---	**7E-05**	2.45E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	---	1.48E-01	NA	---	---	5.30E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.80E+01	Y	---	4.11E+00	2.00E+02	---	**2E-02**	1.47E+00	-		---
M,P-XYLENE	108-38-3	1.10E+00	Y	---	2.51E-01	1.00E+02	---	**3E-03**	8.97E-02	-		---
METHYLENE CHLORIDE	75-09-2	2.65E-01	N	---	6.05E-02	6.00E+02	---	**1E-04**	2.16E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.60E-01	Y	---	8.22E-02	1.00E+02	---	**8E-04**	2.94E-02	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	Y	---	1.14E-02	4.00E+01	---	**3E-04**	4.08E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.00E-03	N	---	1.83E-03	8.00E+01	---	**2E-05**	6.52E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0062H**	**Total Inhalation**	---	**2E-01**	**6E-06**
		Based on NDs only	**0E+00**	**2E-01**	**4E-06**
		Based on Detects only	**#VALUE!**	**4E-02**	**2E-06**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0062H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.65E-01	NA	NA	NA	2.16E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	2.04E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	8.00E-03	NA	NA	NA	6.52E-04	4.4E-06		---	---	---	3E-09	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0063H**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime		
	TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02		

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	4.00E+00	Y	---	9.13E-01	4.00E+01	---	**2E-02**	3.26E-01	2.60E-07		**8E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0063H**	**Total Inhalation**	---	**5E-02**	**2E-07**
		Based on NDs only	**0E+00**	**3E-02**	**8E-08**
		Based on Detects only	**#VALUE!**	**2E-02**	**8E-08**
		Site-related only	**0E+00**	**5E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0063H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	NA	2.04E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	**---**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0064H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	---	1.17E-01	NA	---	---	4.20E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.66E-01	N	---	3.79E-02	2.00E+00	---	**2E-02**	1.35E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	5.10E-01	Y	---	1.16E-01	3.00E+01	---	**4E-03**	4.16E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	---	9.36E-02	2.00E-01	---	**5E-01**	3.34E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	---	3.56E-01	2.00E+00	---	**2E-01**	1.27E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E-01	Y	---	2.74E-02	6.00E+01	---	**5E-04**	9.78E-03	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	---	1.37E-01	9.00E+00	---	**2E-02**	4.89E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	7.50E-02	Y	---	1.71E-02	7.00E+00	---	**2E-03**	6.12E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	---	8.33E-02	4.00E+00	---	**2E-02**	2.98E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	---	1.71E-01	6.00E+01	---	**3E-03**	6.12E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	---	2.06E-01	8.00E+02	---	**3E-04**	7.35E-02	1.10E-05		**8E-07**
BENZENE	71-43-2	6.07E-01	Y	---	1.39E-01	3.00E+01	---	**5E-03**	4.95E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	---	2.19E-01	1.00E+00	---	**2E-01**	7.81E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	---	1.15E-01	NA	---	---	4.10E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	5.50E-01	N	---	1.26E-01	5.00E+00	---	**3E-02**	4.48E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	---	9.13E-02	1.00E+02	---	**9E-04**	3.26E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	7.60E-01	Y	---	1.74E-01	9.77E+01	---	**2E-03**	6.20E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	2.90E+00	Y	---	6.62E-01	7.00E+01	---	**9E-03**	2.36E-01	-		---
ETHYLBENZENE	100-41-4	1.70E+00	Y	---	3.88E-01	1.00E+03	---	**4E-04**	1.39E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	---	3.65E-01	NA	---	---	1.30E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	1.00E+01	Y	---	2.28E+00	2.00E+02	---	**1E-02**	8.15E-01	-		---
M,P-XYLENE	108-38-3	5.65E+00	Y	---	1.29E+00	1.00E+02	---	**1E-02**	4.61E-01	-		---
METHYLENE CHLORIDE	75-09-2	1.10E+00	Y	---	2.51E-01	6.00E+02	---	**4E-04**	8.97E-02	1.00E-08	M	**9E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.52E+00	Y	---	3.47E-01	1.00E+02	---	**3E-03**	1.24E-01	-		---
TETRACHLOROETHENE	127-18-4	1.30E+01	Y	---	2.97E+00	4.00E+01	---	**7E-02**	1.06E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	1.50E-01	Y	---	3.42E-02	2.00E+00	---	**2E-02**	1.22E-02	4.10E-06	M	**5E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	---	8.03E-02	2.00E+02	---	**4E-04**	2.87E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.48E-02	8.00E+01	---	**2E-04**	5.30E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0064H**	**Total Inhalation**	---	**1E+00**	**4E-05**
		Based on NDs only	**0E+00**	**9E-01**	**4E-05**
		Based on Detects only	**#VALUE!**	**1E-01**	**3E-06**
		Site-related only	**0E+00**	**1E-01**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0064H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.10E+00	NA	NA	NA	8.97E-02	1.0E-08		---	---	---	9E-10	**9E-10**
TRICHLOROETHENE	79-01-6	1.50E-01	NA	NA	NA	1.22E-02	1.0E-06	kidney	---	---	---	1E-08	**1E-08**
TRICHLOROETHENE	79-01-6	1.50E-01	NA		1.22E-02		3.1E-06	NHL+liver	---		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	5.30E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0065H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.50E-02	N	---	1.26E-02	NA	---	---	4.48E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	6.00E-02	N	---	1.37E-02	2.00E+00	---	**7E-03**	4.89E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	2.35E-01	N	---	5.37E-02	3.00E+01	---	**2E-03**	1.92E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.05E-02	N	---	9.25E-03	2.00E-01	---	**5E-02**	3.30E-03	1.60E-05		**5E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.65E+00	N	---	3.77E-01	2.00E+00	---	**2E-01**	1.35E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.50E-01	Y	---	1.03E-01	6.00E+01	---	**2E-03**	3.67E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	2.95E-02	N	---	6.74E-03	9.00E+00	---	**7E-04**	2.41E-03	6.00E-04		**1E-06**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	---	1.76E-02	7.00E+00	---	**3E-03**	6.28E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.35E-01	N	---	3.08E-02	4.00E+00	---	**8E-03**	1.10E-02	3.70E-06		**4E-08**
1,3,5-Trimethylbenzene	108-67-8	1.20E-01	N	---	2.74E-02	6.00E+01	---	**5E-04**	9.78E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	N	---	1.94E-02	8.00E+02	---	**2E-05**	6.93E-03	1.10E-05		**8E-08**
BENZENE	71-43-2	8.60E-01	Y	---	1.96E-01	3.00E+01	---	**7E-03**	7.01E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	1.25E-01	N	---	2.85E-02	1.00E+00	---	**3E-02**	1.02E-02	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	2.95E-01	N	---	6.74E-02	NA	---	---	2.41E-02	3.70E-05		**9E-07**
BROMOMETHANE	74-83-9	4.15E-01	N	---	9.47E-02	5.00E+00	---	**2E-02**	3.38E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.40E-01	Y	---	1.23E-01	1.00E+02	---	**1E-03**	4.40E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	6.70E-01	Y	---	1.53E-01	9.77E+01	---	**2E-03**	5.46E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	2.00E+00	Y	---	4.57E-01	7.00E+01	---	**7E-03**	1.63E-01	-		**---**
ETHYLBENZENE	100-41-4	3.60E-01	Y	---	8.22E-02	1.00E+03	---	**8E-05**	2.94E-02	2.50E-06		**7E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	2.20E+00	N	---	5.02E-01	NA	---	---	1.79E-01	2.20E-05		**4E-06**
ISOPROPYL ALCOHOL	67-63-0	1.00E+01	Y	---	2.28E+00	2.00E+02	---	**1E-02**	8.15E-01	-		**---**
M,P-XYLENE	108-38-3	1.40E+00	Y	---	3.20E-01	1.00E+02	---	**3E-03**	1.14E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	6.20E-01	Y	---	1.42E-01	6.00E+02	---	**2E-04**	5.06E-02	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	4.50E-02	Y	---	1.03E-02	3.00E+00	---	**3E-03**	3.67E-03	3.40E-05		**1E-07**
O-XYLENE	95-47-6	4.60E-01	Y	---	1.05E-01	1.00E+02	---	**1E-03**	3.75E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.60E-01	Y	---	3.65E-02	4.00E+01	---	**9E-04**	1.30E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	N	---	2.05E-02	2.00E+00	---	**1E-02**	7.34E-03	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	2.40E-02	N	---	5.48E-03	8.00E+01	---	**7E-05**	1.96E-03	4.40E-06	M	**9E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0065H**	**Total Inhalation**	**---**	**4E-01**	**1E-05**
		Based on NDs only	**0E+00**	**3E-01**	**7E-06**
		Based on Detects only	**#VALUE!**	**4E-02**	**2E-06**
		Site-related only	**0E+00**	**1E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0065H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.20E-01	NA	NA	NA	5.06E-02	1.0E-08		---	---	---	5E-10	**5E-10**
TRICHLOROETHENE	79-01-6	9.00E-02	NA	NA	NA	7.34E-03	1.0E-06	kidney	---	---	---	7E-09	**7E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	NA		7.34E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	2.40E-02	NA	NA	NA	1.96E-03	4.4E-06		---	---	---	9E-09	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0066H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.25E-02	N	---	5.14E-03	NA	---	---	1.83E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	1.00E-01	N	---	2.28E-02	2.00E+00	---	**1E-02**	8.15E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	4.30E-01	Y	---	9.82E-02	3.00E+01	---	**3E-03**	3.51E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.10E-02	N	---	4.79E-03	2.00E-01	---	**2E-02**	1.71E-03	1.60E-05		**3E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	---	1.60E-01	2.00E+00	---	**8E-02**	5.71E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.30E-01	Y	---	9.82E-02	6.00E+01	---	**2E-03**	3.51E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	---	1.71E-02	9.00E+00	---	**2E-03**	6.12E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	3.50E-01	Y	---	7.99E-02	7.00E+00	---	**1E-02**	2.85E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	---	2.40E-02	4.00E+00	---	**6E-03**	8.56E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	---	2.97E-02	6.00E+01	---	**5E-04**	1.06E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	N	---	1.94E-02	8.00E+02	---	**2E-05**	6.93E-03	1.10E-05		**8E-08**
BENZENE	71-43-2	9.90E-01	Y	---	2.26E-01	3.00E+01	---	**8E-03**	8.07E-02	7.80E-06		**6E-07**
BENZYL CHLORIDE	100-44-7	2.50E-01	N	---	5.71E-02	1.00E+00	---	**6E-02**	2.04E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	2.55E-01	N	---	5.82E-02	NA	---	---	2.08E-02	3.70E-05		**8E-07**
BROMOMETHANE	74-83-9	8.50E-01	N	---	1.94E-01	5.00E+00	---	**4E-02**	6.93E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	---	1.05E-01	1.00E+02	---	**1E-03**	3.75E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	6.30E-01	Y	---	1.44E-01	9.77E+01	---	**1E-03**	5.14E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	6.70E+00	Y	---	1.53E+00	7.00E+01	---	**2E-02**	5.46E-01	-		---
ETHYLBENZENE	100-41-4	5.10E-01	Y	---	1.16E-01	1.00E+03	---	**1E-04**	4.16E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	---	1.83E-01	NA	---	---	6.52E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.10E+01	Y	---	2.51E+00	2.00E+02	---	**1E-02**	8.97E-01	-		---
M,P-XYLENE	108-38-3	1.50E+00	Y	---	3.42E-01	1.00E+02	---	**3E-03**	1.22E-01	-		---
METHYLENE CHLORIDE	75-09-2	3.35E-01	N	---	7.65E-02	6.00E+02	---	**1E-04**	2.73E-02	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	2.55E-02	N	---	5.82E-03	3.00E+00	---	**2E-03**	2.08E-03	3.40E-05		**7E-08**
O-XYLENE	95-47-6	3.70E-01	Y	---	8.45E-02	1.00E+02	---	**8E-04**	3.02E-02	-		---
TETRACHLOROETHENE	127-18-4	9.40E-02	Y	---	2.15E-02	4.00E+01	---	**5E-04**	7.66E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	1.90E-01	Y	---	4.34E-02	2.00E+00	---	**2E-02**	1.55E-02	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	7.00E-03	N	---	1.60E-03	8.00E+01	---	**2E-05**	5.71E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0066H**	**Total Inhalation**	---	**3E-01**	**1E-05**
		Based on NDs only	**0E+00**	**2E-01**	**7E-06**
		Based on Detects only	**#VALUE!**	**9E-02**	**3E-06**
		Site-related only	**0E+00**	**3E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0066H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.35E-01	NA	NA	NA	2.73E-02	1.0E-08		---	---	---	3E-10	**3E-10**
TRICHLOROETHENE	79-01-6	1.90E-01	NA	NA	NA	1.55E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	1.90E-01	NA		1.55E-02		3.1E-06	NHL+liver	---		5E-08		**5E-08**
VINYL CHLORIDE	75-01-4	7.00E-03	NA	NA	NA	5.71E-04	4.4E-06		---	---	---	3E-09	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0069H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	3.00E-02	N	---	6.85E-03	NA	---	---	2.45E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	1.35E-01	N	---	3.08E-02	2.00E+00	---	**2E-02**	1.10E-02	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	2.90E-01	Y	---	6.62E-02	3.00E+01	---	**2E-03**	2.36E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.80E-02	N	---	6.39E-03	2.00E-01	---	**3E-02**	2.28E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	9.00E-01	N	---	2.05E-01	2.00E+00	---	**1E-01**	7.34E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	8.30E-01	Y	---	1.89E-01	6.00E+01	---	**3E-03**	6.77E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	1.00E-01	N	---	2.28E-02	9.00E+00	---	**3E-03**	8.15E-03	6.00E-04		**5E-06**
1,2-DICHLOROETHANE	107-06-2	1.40E+00	Y	---	3.20E-01	7.00E+00	---	**5E-02**	1.14E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	1.40E-01	N	---	3.20E-02	4.00E+00	---	**8E-03**	1.14E-02	3.70E-06		**4E-08**
1,3,5-Trimethylbenzene	108-67-8	1.70E-01	N	---	3.88E-02	6.00E+01	---	**6E-04**	1.39E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	Y	---	1.94E-02	8.00E+02	---	**2E-05**	6.93E-03	1.10E-05		**8E-08**
BENZENE	71-43-2	8.40E-01	Y	---	1.92E-01	3.00E+01	---	**6E-03**	6.85E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	3.40E-01	N	---	7.76E-02	1.00E+00	---	**8E-02**	2.77E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	3.45E-01	N	---	7.88E-02	NA	---	---	2.81E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	1.15E+00	N	---	2.63E-01	5.00E+00	---	**5E-02**	9.38E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	---	1.00E-01	1.00E+02	---	**1E-03**	3.59E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	6.00E-01	Y	---	1.37E-01	9.77E+01	---	**1E-03**	4.89E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	1.10E+00	Y	---	2.51E-01	7.00E+01	---	**4E-03**	8.97E-02	-		**---**
ETHYLBENZENE	100-41-4	2.30E-01	Y	---	5.25E-02	1.00E+03	---	**5E-05**	1.88E-02	2.50E-06		**5E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.10E+00	N	---	2.51E-01	NA	---	---	8.97E-02	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	4.60E+00	Y	---	1.05E+00	2.00E+02	---	**5E-03**	3.75E-01	-		**---**
M,P-XYLENE	108-38-3	8.70E-01	Y	---	1.99E-01	1.00E+02	---	**2E-03**	7.09E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	7.90E-01	Y	---	1.80E-01	6.00E+02	---	**3E-04**	6.44E-02	1.00E-08	M	**6E-10**
NAPHTHALENE	91-20-3	2.70E-02	N	---	6.16E-03	3.00E+00	---	**2E-03**	2.20E-03	3.40E-05		**7E-08**
O-XYLENE	95-47-6	3.60E-01	Y	---	8.22E-02	1.00E+02	---	**8E-04**	2.94E-02	-		**---**
TETRACHLOROETHENE	127-18-4	3.40E-01	Y	---	7.76E-02	4.00E+01	---	**2E-03**	2.77E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	1.30E-01	Y	---	2.97E-02	2.00E+00	---	**1E-02**	1.06E-02	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	9.00E-03	N	---	2.05E-03	8.00E+01	---	**3E-05**	7.34E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0069H**	**Total Inhalation**	**---**	**4E-01**	**2E-05**
		Based on NDs only	**0E+00**	**3E-01**	**1E-05**
		Based on Detects only	**#VALUE!**	**9E-02**	**5E-06**
		Site-related only	**0E+00**	**2E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0069H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.90E-01	NA	NA	NA	6.44E-02	1.0E-08		---	---	---	6E-10	**6E-10**
TRICHLOROETHENE	79-01-6	1.30E-01	NA	NA	NA	1.06E-02	1.0E-06	kidney	---	---	---	1E-08	**1E-08**
TRICHLOROETHENE	79-01-6	1.30E-01	NA		1.06E-02		3.1E-06	NHL+liver	---		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	9.00E-03	NA	NA	NA	7.34E-04	4.4E-06		---	---	---	3E-09	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0071H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	---	4.91E-03	NA	---	---	1.75E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	9.50E-02	N	---	2.17E-02	2.00E+00	---	**1E-02**	7.75E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	6.00E-02	N	---	1.37E-02	3.00E+01	---	**5E-04**	4.89E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	---	4.57E-03	2.00E-01	---	**2E-02**	1.63E-03	1.60E-05		**3E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	---	1.48E-01	2.00E+00	---	**7E-02**	5.30E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E-01	N	---	3.20E-02	6.00E+01	---	**5E-04**	1.14E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	---	1.60E-02	9.00E+00	---	**2E-03**	5.71E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	8.00E-01	Y	---	1.83E-01	7.00E+00	---	**3E-02**	6.52E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	---	2.28E-02	4.00E+00	---	**6E-03**	8.15E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	1.20E-01	N	---	2.74E-02	6.00E+01	---	**5E-04**	9.78E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	---	1.83E-02	8.00E+02	---	**2E-05**	6.52E-03	1.10E-05		**7E-08**
BENZENE	71-43-2	6.50E-01	Y	---	1.48E-01	3.00E+01	---	**5E-03**	5.30E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	2.40E-01	N	---	5.48E-02	1.00E+00	---	**5E-02**	1.96E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	2.45E-01	N	---	5.59E-02	NA	---	---	2.00E-02	3.70E-05		**7E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.83E-01	5.00E+00	---	**4E-02**	6.52E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	---	1.05E-01	1.00E+02	---	**1E-03**	3.75E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.60E+00	Y	---	3.65E-01	9.77E+01	---	**4E-03**	1.30E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	2.60E+01	Y	---	5.94E+00	7.00E+01	---	**8E-02**	2.12E+00	-		---
ETHYLBENZENE	100-41-4	3.00E-01	Y	---	6.85E-02	1.00E+03	---	**7E-05**	2.45E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	---	1.83E-01	NA	---	---	6.52E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	4.30E+00	Y	---	9.82E-01	2.00E+02	---	**5E-03**	3.51E-01	-		---
M,P-XYLENE	108-38-3	8.50E-01	Y	---	1.94E-01	1.00E+02	---	**2E-03**	6.93E-02	-		---
METHYLENE CHLORIDE	75-09-2	3.15E-01	N	---	7.19E-02	6.00E+02	---	**1E-04**	2.57E-02	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	2.75E-02	N	---	6.28E-03	3.00E+00	---	**2E-03**	2.24E-03	3.40E-05		**8E-08**
O-XYLENE	95-47-6	3.20E-01	Y	---	7.31E-02	1.00E+02	---	**7E-04**	2.61E-02	-		---
TETRACHLOROETHENE	127-18-4	3.30E-01	Y	---	7.53E-02	4.00E+01	---	**2E-03**	2.69E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	---	1.14E-02	2.00E+00	---	**6E-03**	4.08E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	6.50E-03	N	---	1.48E-03	8.00E+01	---	**2E-05**	5.30E-04	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0071H**	**Total Inhalation**	---	**3E-01**	**1E-05**
		Based on NDs only	**0E+00**	**2E-01**	**7E-06**
		Based on Detects only	**#VALUE!**	**1E-01**	**5E-06**
		Site-related only	**0E+00**	**8E-03**	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0071H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.15E-01	NA	NA	NA	2.57E-02	1.0E-08		---	---	---	3E-10	**3E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	NA	NA	NA	4.08E-03	1.0E-06	kidney	---	---	---	4E-09	**4E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	NA		4.08E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	6.50E-03	NA	NA	NA	5.30E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0072H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.90E-02	N	---	6.62E-03	NA	---	---	2.36E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	6.00E-02	N	---	1.37E-02	2.00E+00	---	**7E-03**	4.89E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	1.00E-01	N	---	2.28E-02	3.00E+01	---	**8E-04**	8.15E-03	5.00E-06		**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.40E-02	N	---	3.20E-03	2.00E-01	---	**2E-02**	1.14E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	---	1.37E-01	2.00E+00	---	**7E-02**	4.89E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.70E-01	Y	---	6.16E-02	6.00E+01	---	**1E-03**	2.20E-02	-		---
1,2-DIBROMOETHANE	106-93-4	5.00E-02	N	---	1.14E-02	9.00E+00	---	**1E-03**	4.08E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	---	2.51E-02	7.00E+00	---	**4E-03**	8.97E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.15E-01	N	---	2.63E-02	4.00E+00	---	**7E-03**	9.38E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	9.50E-02	N	---	2.17E-02	6.00E+01	---	**4E-04**	7.75E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	---	1.26E-02	8.00E+02	---	**2E-05**	4.48E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	4.00E-01	Y	---	9.13E-02	3.00E+01	---	**3E-03**	3.26E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	1.30E-01	N	---	2.97E-02	1.00E+00	---	**3E-02**	1.06E-02	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	---	2.97E-02	NA	---	---	1.06E-02	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	---	1.60E-01	5.00E+00	---	**3E-02**	5.71E-02	-		---
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	---	8.68E-02	1.00E+02	---	**9E-04**	3.10E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	2.90E-01	Y	---	6.62E-02	9.77E+01	---	**7E-04**	2.36E-02	2.30E-05		**5E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.10E-01	Y	---	4.79E-02	1.00E+03	---	**5E-05**	1.71E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.90E-01	N	---	1.12E-01	NA	---	---	4.00E-02	2.20E-05		**9E-07**
ISOPROPYL ALCOHOL	67-63-0	3.10E+01	Y	---	7.08E+00	2.00E+02	---	**4E-02**	2.53E+00	-		---
M,P-XYLENE	108-38-3	6.80E-01	Y	---	1.55E-01	1.00E+02	---	**2E-03**	5.54E-02	-		---
METHYLENE CHLORIDE	75-09-2	7.20E-01	Y	---	1.64E-01	6.00E+02	---	**3E-04**	5.87E-02	1.00E-08	M	**6E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.50E-01	Y	---	5.71E-02	1.00E+02	---	**6E-04**	2.04E-02	-		---
TETRACHLOROETHENE	127-18-4	2.40E-01	Y	---	5.48E-02	4.00E+01	---	**1E-03**	1.96E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.80E-02	Y	---	6.39E-03	2.00E+00	---	**3E-03**	2.28E-03	4.10E-06	M	**9E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	4.60E-03	N	---	1.05E-03	8.00E+01	---	**1E-05**	3.75E-04	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0072H**	**Total Inhalation**	---	**2E-01**	**6E-06**
		Based on NDs only	**0E+00**	**2E-01**	**5E-06**
		Based on Detects only	**#VALUE!**	**5E-02**	**1E-06**
		Site-related only	**0E+00**	**5E-03**	**6E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0072H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.20E-01	NA	NA	NA	5.87E-02	1.0E-08		---	---	---	6E-10	**6E-10**
TRICHLOROETHENE	79-01-6	2.80E-02	NA	NA	NA	2.28E-03	1.0E-06	kidney	---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	2.80E-02	NA		2.28E-03		3.1E-06	NHL+liver	---		7E-09		**7E-09**
VINYL CHLORIDE	75-01-4	4.60E-03	NA	NA	NA	3.75E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0076H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.25E-02	N	---	5.14E-03	NA	---	---	1.83E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	1.00E-01	N	---	2.28E-02	2.00E+00	---	**1E-02**	8.15E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	2.50E-01	Y	---	5.71E-02	3.00E+01	---	**2E-03**	2.04E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.10E-02	N	---	4.79E-03	2.00E-01	---	**2E-02**	1.71E-03	1.60E-05		**3E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	---	1.60E-01	2.00E+00	---	**8E-02**	5.71E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.70E+00	Y	---	3.88E-01	6.00E+01	---	**6E-03**	1.39E-01	-		---
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	---	1.71E-02	9.00E+00	---	**2E-03**	6.12E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	1.20E-01	Y	---	2.74E-02	7.00E+00	---	**4E-03**	9.78E-03	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	---	2.40E-02	4.00E+00	---	**6E-03**	8.56E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	4.10E-01	Y	---	9.36E-02	6.00E+01	---	**2E-03**	3.34E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	N	---	1.94E-02	8.00E+02	---	**2E-05**	6.93E-03	1.10E-05		**8E-08**
BENZENE	71-43-2	3.40E+00	Y	---	7.76E-01	3.00E+01	---	**3E-02**	2.77E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	2.50E-01	N	---	5.71E-02	1.00E+00	---	**6E-02**	2.04E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	2.55E-01	N	---	5.82E-02	NA	---	---	2.08E-02	3.70E-05		**8E-07**
BROMOMETHANE	74-83-9	8.50E-01	N	---	1.94E-01	5.00E+00	---	**4E-02**	6.93E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	---	1.05E-01	1.00E+02	---	**1E-03**	3.75E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	7.50E-01	Y	---	1.71E-01	9.77E+01	---	**2E-03**	6.12E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	4.90E+00	Y	---	1.12E+00	7.00E+01	---	**2E-02**	4.00E-01	-		---
ETHYLBENZENE	100-41-4	1.80E+00	Y	---	4.11E-01	1.00E+03	---	**4E-04**	1.47E-01	2.50E-06		**4E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	---	1.83E-01	NA	---	---	6.52E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	8.50E+00	Y	---	1.94E+00	2.00E+02	---	**1E-02**	6.93E-01	-		---
M,P-XYLENE	108-38-3	8.60E+00	Y	---	1.96E+00	1.00E+02	---	**2E-02**	7.01E-01	-		---
METHYLENE CHLORIDE	75-09-2	8.30E-01	Y	---	1.89E-01	6.00E+02	---	**3E-04**	6.77E-02	1.00E-08	M	**7E-10**
NAPHTHALENE	91-20-3	2.90E-02	N	---	6.62E-03	3.00E+00	---	**2E-03**	2.36E-03	3.40E-05		**8E-08**
O-XYLENE	95-47-6	2.20E+00	Y	---	5.02E-01	1.00E+02	---	**5E-03**	1.79E-01	-		---
TETRACHLOROETHENE	127-18-4	4.90E-02	Y	---	1.12E-02	4.00E+01	---	**3E-04**	4.00E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	---	1.14E-02	2.00E+00	---	**6E-03**	4.08E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	7.00E-03	N	---	1.60E-03	8.00E+01	---	**2E-05**	5.71E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0076H**	**Total Inhalation**	---	**3E-01**	**1E-05**
		Based on NDs only	**0E+00**	**2E-01**	**7E-06**
		Based on Detects only	**#VALUE!**	**9E-02**	**5E-06**
		Site-related only	**0E+00**	**8E-03**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0076H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.30E-01	NA	NA	NA	6.77E-02	1.0E-08		---	---	---	7E-10	**7E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	NA	NA	NA	4.08E-03	1.0E-06	kidney	---	---	---	4E-09	**4E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	NA		4.08E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	7.00E-03	NA	NA	NA	5.71E-04	4.4E-06		---	---	---	3E-09	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0091H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.20E-02	N	---	5.02E-03	NA	---	---	1.79E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	1.00E-01	N	---	2.28E-02	2.00E+00	---	**1E-02**	8.15E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	2.80E-01	Y	---	6.39E-02	3.00E+01	---	**2E-03**	2.28E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.05E-02	N	---	4.68E-03	2.00E-01	---	**2E-02**	1.67E-03	1.60E-05		**3E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.00E+00	N	---	2.28E-01	2.00E+00	---	**1E-01**	8.15E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.10E-01	Y	---	1.16E-01	6.00E+01	---	**2E-03**	4.16E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	---	1.60E-02	9.00E+00	---	**2E-03**	5.71E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	4.70E-01	Y	---	1.07E-01	7.00E+00	---	**2E-02**	3.83E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	1.10E-01	Y	---	2.51E-02	4.00E+00	---	**6E-03**	8.97E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	1.25E-01	N	---	2.85E-02	6.00E+01	---	**5E-04**	1.02E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	1.30E-01	Y	---	2.97E-02	8.00E+02	---	**4E-05**	1.06E-02	1.10E-05		**1E-07**
BENZENE	71-43-2	8.30E-01	Y	---	1.89E-01	3.00E+01	---	**6E-03**	6.77E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	---	5.59E-02	1.00E+00	---	**6E-02**	2.00E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	6.80E-01	Y	---	1.55E-01	NA	---	---	5.54E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.83E-01	5.00E+00	---	**4E-02**	6.52E-02	-		---
CARBON TETRACHLORIDE	56-23-5	7.70E-01	Y	---	1.76E-01	1.00E+02	---	**2E-03**	6.28E-02	6.00E-06		**4E-07**
CHLOROFORM	67-66-3	3.80E+00	Y	---	8.68E-01	9.77E+01	---	**9E-03**	3.10E-01	2.30E-05		**7E-06**
ETHYL ACETATE	141-78-6	8.20E+00	Y	---	1.87E+00	7.00E+01	---	**3E-02**	6.69E-01	-		---
ETHYLBENZENE	100-41-4	6.60E-01	Y	---	1.51E-01	1.00E+03	---	**2E-04**	5.38E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	---	1.83E-01	NA	---	---	6.52E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	5.60E+01	Y	---	1.28E+01	2.00E+02	---	**6E-02**	4.57E+00	-		---
M,P-XYLENE	108-38-3	1.90E+00	Y	---	4.34E-01	1.00E+02	---	**4E-03**	1.55E-01	-		---
METHYLENE CHLORIDE	75-09-2	1.10E+00	Y	---	2.51E-01	6.00E+02	---	**4E-04**	8.97E-02	1.00E-08	M	**9E-10**
NAPHTHALENE	91-20-3	2.75E-02	N	---	6.28E-03	3.00E+00	---	**2E-03**	2.24E-03	3.40E-05		**8E-08**
O-XYLENE	95-47-6	7.20E-01	Y	---	1.64E-01	1.00E+02	---	**2E-03**	5.87E-02	-		---
TETRACHLOROETHENE	127-18-4	1.80E+01	Y	---	4.11E+00	4.00E+01	---	**1E-01**	1.47E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	4.30E-01	Y	---	9.82E-02	2.00E+00	---	**5E-02**	3.51E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	6.50E-03	N	---	1.48E-03	8.00E+01	---	**2E-05**	5.30E-04	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0091H**	**Total Inhalation**	---	**5E-01**	**2E-05**
		Based on NDs only	**0E+00**	**2E-01**	**6E-06**
		Based on Detects only	**#VALUE!**	**3E-01**	**1E-05**
		Site-related only	**0E+00**	**2E-01**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0091H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.10E+00	NA	NA	NA	8.97E-02	1.0E-08		---	---	---	9E-10	**9E-10**
TRICHLOROETHENE	79-01-6	4.30E-01	NA	NA	NA	3.51E-02	1.0E-06	kidney	---	---	---	4E-08	**4E-08**
TRICHLOROETHENE	79-01-6	4.30E-01	NA		3.51E-02		3.1E-06	NHL+liver	---		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	6.50E-03	NA	NA	NA	5.30E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0098H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	---	4.91E-03	NA	---	---	1.75E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	1.00E-01	N	---	2.28E-02	2.00E+00	---	**1E-02**	8.15E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	1.80E-01	Y	---	4.11E-02	3.00E+01	---	**1E-03**	1.47E-02	5.00E-06		**7E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	---	4.57E-03	2.00E-01	---	**2E-02**	1.63E-03	1.60E-05		**3E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	---	1.48E-01	2.00E+00	---	**7E-02**	5.30E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.30E+00	Y	---	2.97E-01	6.00E+01	---	**5E-03**	1.06E-01	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	---	1.60E-02	9.00E+00	---	**2E-03**	5.71E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	9.10E-02	Y	---	2.08E-02	7.00E+00	---	**3E-03**	7.42E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	---	2.28E-02	4.00E+00	---	**6E-03**	8.15E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	3.30E-01	Y	---	7.53E-02	6.00E+01	---	**1E-03**	2.69E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	1.30E+00	Y	---	2.97E-01	8.00E+02	---	**4E-04**	1.06E-01	1.10E-05		**1E-06**
BENZENE	71-43-2	5.30E+00	Y	---	1.21E+00	3.00E+01	---	**4E-02**	4.32E-01	7.80E-06		**3E-06**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	---	5.59E-02	1.00E+00	---	**6E-02**	2.00E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	2.45E-01	N	---	5.59E-02	NA	---	---	2.00E-02	3.70E-05		**7E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.83E-01	5.00E+00	---	**4E-02**	6.52E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	---	1.03E-01	1.00E+02	---	**1E-03**	3.67E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	4.60E-01	Y	---	1.05E-01	9.77E+01	---	**1E-03**	3.75E-02	2.30E-05		**9E-07**
ETHYL ACETATE	141-78-6	1.50E+00	Y	---	3.42E-01	7.00E+01	---	**5E-03**	1.22E-01	-		---
ETHYLBENZENE	100-41-4	3.00E+00	Y	---	6.85E-01	1.00E+03	---	**7E-04**	2.45E-01	2.50E-06		**6E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	---	1.83E-01	NA	---	---	6.52E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	5.40E+00	Y	---	1.23E+00	2.00E+02	---	**6E-03**	4.40E-01	-		---
M,P-XYLENE	108-38-3	1.30E+01	Y	---	2.97E+00	1.00E+02	---	**3E-02**	1.06E+00	-		---
METHYLENE CHLORIDE	75-09-2	4.55E-01	N	---	1.04E-01	6.00E+02	---	**2E-04**	3.71E-02	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	2.50E-02	N	---	5.71E-03	3.00E+00	---	**2E-03**	2.04E-03	3.40E-05		**7E-08**
O-XYLENE	95-47-6	3.50E+00	Y	---	7.99E-01	1.00E+02	---	**8E-03**	2.85E-01	-		---
TETRACHLOROETHENE	127-18-4	1.20E+00	Y	---	2.74E-01	4.00E+01	---	**7E-03**	9.78E-02	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	7.80E-01	Y	---	1.78E-01	2.00E+00	---	**9E-02**	6.36E-02	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	6.50E-03	N	---	1.48E-03	8.00E+01	---	**2E-05**	5.30E-04	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0098H**	**Total Inhalation**	---	**4E-01**	**1E-05**
		Based on NDs only	**0E+00**	**2E-01**	**7E-06**
		Based on Detects only	**#VALUE!**	**2E-01**	**7E-06**
		Site-related only	**0E+00**	**1E-01**	**4E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0098H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.55E-01	NA	NA	NA	3.71E-02	1.0E-08		---	---	---	4E-10	**4E-10**
TRICHLOROETHENE	79-01-6	7.80E-01	NA	NA	NA	6.36E-02	1.0E-06	kidney	---	---	---	6E-08	**6E-08**
TRICHLOROETHENE	79-01-6	7.80E-01	NA		6.36E-02		3.1E-06	NHL+liver	---		2E-07		**2E-07**
VINYL CHLORIDE	75-01-4	6.50E-03	NA	NA	NA	5.30E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0102H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.50E-02	N	---	3.42E-03	NA	---	---	1.22E-03	5.80E-05		**7E-08**
1,3-BUTADIENE	106-99-0	2.90E-02	N	---	6.62E-03	2.00E+00	---	**3E-03**	2.36E-03	3.00E-05		**7E-08**
1,4-DIOXANE	123-91-1	4.20E-01	Y	---	9.59E-02	3.00E+01	---	**3E-03**	3.42E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.50E-03	N	---	1.94E-03	2.00E-01	---	**1E-02**	6.93E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.05E+00	N	---	2.40E-01	2.00E+00	---	**1E-01**	8.56E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	6.10E+00	Y	---	1.39E+00	6.00E+01	---	**2E-02**	4.97E-01	-		---
1,2-DIBROMOETHANE	106-93-4	8.50E-03	N	---	1.94E-03	9.00E+00	---	**2E-04**	6.93E-04	6.00E-04		**4E-07**
1,2-DICHLOROETHANE	107-06-2	9.00E-01	Y	---	2.05E-01	7.00E+00	---	**3E-02**	7.34E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	4.00E-02	N	---	9.13E-03	4.00E+00	---	**2E-03**	3.26E-03	3.70E-06		**1E-08**
1,3,5-Trimethylbenzene	108-67-8	1.70E+00	Y	---	3.88E-01	6.00E+01	---	**6E-03**	1.39E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	4.40E-02	N	---	1.00E-02	8.00E+02	---	**1E-05**	3.59E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	2.50E+00	Y	---	5.71E-01	3.00E+01	---	**2E-02**	2.04E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	7.00E-02	N	---	1.60E-02	1.00E+00	---	**2E-02**	5.71E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	3.00E-01	Y	---	6.85E-02	NA	---	---	2.45E-02	3.70E-05		**9E-07**
BROMOMETHANE	74-83-9	1.95E-01	N	---	4.45E-02	5.00E+00	---	**9E-03**	1.59E-02	-		---
CARBON TETRACHLORIDE	56-23-5	1.20E+00	Y	---	2.74E-01	1.00E+02	---	**3E-03**	9.78E-02	6.00E-06		**6E-07**
CHLOROFORM	67-66-3	1.40E+00	Y	---	3.20E-01	9.77E+01	---	**3E-03**	1.14E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	3.60E+00	Y	---	8.22E-01	1.00E+03	---	**8E-04**	2.94E-01	2.50E-06		**7E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	---	1.94E-01	NA	---	---	6.93E-02	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	1.20E+02	Y	---	2.74E+01	2.00E+02	---	**1E-01**	9.78E+00	-		---
M,P-XYLENE	108-38-3	1.80E+01	Y	---	4.11E+00	1.00E+02	---	**4E-02**	1.47E+00	-		---
METHYLENE CHLORIDE	75-09-2	4.80E-01	N	---	1.10E-01	6.00E+02	---	**2E-04**	3.91E-02	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	6.20E+00	Y	---	1.42E+00	1.00E+02	---	**1E-02**	5.06E-01	-		---
TETRACHLOROETHENE	127-18-4	4.70E-01	Y	---	1.07E-01	4.00E+01	---	**3E-03**	3.83E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	2.00E-02	Y	---	4.57E-03	2.00E+00	---	**2E-03**	1.63E-03	4.10E-06	M	**7E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	2.75E-03	N	---	6.28E-04	8.00E+01	---	**8E-06**	2.24E-04	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0102H**	**Total Inhalation**	---	**4E-01**	**1E-05**
		Based on NDs only	**0E+00**	**2E-01**	**2E-06**
		Based on Detects only	**#VALUE!**	**3E-01**	**9E-06**
		Site-related only	**0E+00**	**8E-03**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0102H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.80E-01	NA	NA	NA	3.91E-02	1.0E-08		---	---	---	4E-10	**4E-10**
TRICHLOROETHENE	79-01-6	2.00E-02	NA	NA	NA	1.63E-03	1.0E-06	kidney	---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	2.00E-02	NA		1.63E-03		3.1E-06	NHL+liver	---		5E-09		**5E-09**
VINYL CHLORIDE	75-01-4	2.75E-03	NA	NA	NA	2.24E-04	4.4E-06		---	---	---	1E-09	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0118H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00E-01	N	---	2.28E-02	NA	---	---	8.15E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	4.50E-01	N	---	1.03E-01	2.00E+00	---	**5E-02**	3.67E-02	3.00E-05		**1E-06**
1,4-DIOXANE	123-91-1	1.20E-01	Y	---	2.74E-02	3.00E+01	---	**9E-04**	9.78E-03	5.00E-06		**5E-08**
1,1,2-TRICHLOROETHANE	79-00-5	9.50E-02	N	---	2.17E-02	2.00E-01	---	**1E-01**	7.75E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	3.05E+00	N	---	6.96E-01	2.00E+00	---	**3E-01**	2.49E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.70E-01	Y	---	1.07E-01	6.00E+01	---	**2E-03**	3.83E-02	-		---
1,2-DIBROMOETHANE	106-93-4	3.30E-01	N	---	7.53E-02	9.00E+00	---	**8E-03**	2.69E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	7.80E-02	Y	---	1.78E-02	7.00E+00	---	**3E-03**	6.36E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	4.70E-01	N	---	1.07E-01	4.00E+00	---	**3E-02**	3.83E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	5.50E-01	N	---	1.26E-01	6.00E+01	---	**2E-03**	4.48E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	3.70E-01	N	---	8.45E-02	8.00E+02	---	**1E-04**	3.02E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	7.30E-01	Y	---	1.67E-01	3.00E+01	---	**6E-03**	5.95E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	1.10E+00	N	---	2.51E-01	1.00E+00	---	**3E-01**	8.97E-02	4.90E-05		**4E-06**
BROMODICHLOROMETHANE	75-27-4	1.15E+00	N	---	2.63E-01	NA	---	---	9.38E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	3.75E+00	N	---	8.56E-01	5.00E+00	---	**2E-01**	3.06E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	---	1.03E-01	1.00E+02	---	**1E-03**	3.67E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	2.20E+00	Y	---	5.02E-01	9.77E+01	---	**5E-03**	1.79E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	9.00E+00	Y	---	2.05E+00	7.00E+01	---	**3E-02**	7.34E-01	-		---
ETHYLBENZENE	100-41-4	3.90E-01	Y	---	8.90E-02	1.00E+03	---	**9E-05**	3.18E-02	2.50E-06		**8E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.70E+00	N	---	8.45E-01	NA	---	---	3.02E-01	2.20E-05		**7E-06**
ISOPROPYL ALCOHOL	67-63-0	1.40E+01	Y	---	3.20E+00	2.00E+02	---	**2E-02**	1.14E+00	-		---
M,P-XYLENE	108-38-3	1.70E+00	Y	---	3.88E-01	1.00E+02	---	**4E-03**	1.39E-01	-		---
METHYLENE CHLORIDE	75-09-2	5.00E+02	Y	---	1.14E+02	6.00E+02	---	**2E-01**	4.08E+01	1.00E-08	M	**4E-07**
NAPHTHALENE	91-20-3	2.75E-02	N	---	6.28E-03	3.00E+00	---	**2E-03**	2.24E-03	3.40E-05		**8E-08**
O-XYLENE	95-47-6	5.40E-01	Y	---	1.23E-01	1.00E+02	---	**1E-03**	4.40E-02	-		---
TETRACHLOROETHENE	127-18-4	4.90E+00	Y	---	1.12E+00	4.00E+01	---	**3E-02**	4.00E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	3.10E-02	Y	---	7.08E-03	2.00E+00	---	**4E-03**	2.53E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	3.00E-02	N	---	6.85E-03	8.00E+01	---	**9E-05**	2.45E-03	4.40E-06	M	**1E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0118H**	**Total Inhalation**	---	**1E+00**	**4E-05**
		Based on NDs only	**0E+00**	**1E+00**	**3E-05**
		Based on Detects only	**#VALUE!**	**3E-01**	**6E-06**
		Site-related only	**0E+00**	**3E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0118H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.00E+02	NA	NA	NA	4.08E+01	1.0E-08		---	---	---	4E-07	**4E-07**
TRICHLOROETHENE	79-01-6	3.10E-02	NA	NA	NA	2.53E-03	1.0E-06	kidney	---	---	---	3E-09	**3E-09**
TRICHLOROETHENE	79-01-6	3.10E-02	NA		2.53E-03		3.1E-06	NHL+liver	---		8E-09		**8E-09**
VINYL CHLORIDE	75-01-4	3.00E-02	NA	NA	NA	2.45E-03	4.4E-06		---	---	---	1E-08	**1E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0121H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.90E-02	N	---	6.62E-03	NA	---	---	2.36E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	9.00E-02	N	---	2.05E-02	2.00E+00	---	**1E-02**	7.34E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	2.00E-01	Y	---	4.57E-02	3.00E+01	---	**2E-03**	1.63E-02	5.00E-06		**8E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.90E-02	N	---	4.34E-03	2.00E-01	---	**2E-02**	1.55E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	---	1.60E-01	2.00E+00	---	**8E-02**	5.71E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.35E-01	N	---	3.08E-02	6.00E+01	---	**5E-04**	1.10E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	---	1.60E-02	9.00E+00	---	**2E-03**	5.71E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	1.00E-01	Y	---	2.28E-02	7.00E+00	---	**3E-03**	8.15E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	2.17E-02	4.00E+00	---	**5E-03**	7.75E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	---	2.63E-02	6.00E+01	---	**4E-04**	9.38E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	6.10E-02	Y	---	1.39E-02	8.00E+02	---	**2E-05**	4.97E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	7.30E-01	Y	---	1.67E-01	3.00E+01	---	**6E-03**	5.95E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	2.30E-01	N	---	5.25E-02	1.00E+00	---	**5E-02**	1.88E-02	4.90E-05		**9E-07**
BROMODICHLOROMETHANE	75-27-4	2.40E-01	Y	---	5.48E-02	NA	---	---	1.96E-02	3.70E-05		**7E-07**
BROMOMETHANE	74-83-9	7.50E-01	N	---	1.71E-01	5.00E+00	---	**3E-02**	6.12E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	---	1.03E-01	1.00E+02	---	**1E-03**	3.67E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	9.80E-01	Y	---	2.24E-01	9.77E+01	---	**2E-03**	7.99E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	2.10E+00	Y	---	4.79E-01	7.00E+01	---	**7E-03**	1.71E-01	-		---
ETHYLBENZENE	100-41-4	3.20E-01	Y	---	7.31E-02	1.00E+03	---	**7E-05**	2.61E-02	2.50E-06		**7E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	---	1.71E-01	NA	---	---	6.12E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	5.90E+01	Y	---	1.35E+01	2.00E+02	---	**7E-02**	4.81E+00	-		---
M,P-XYLENE	108-38-3	1.30E+00	Y	---	2.97E-01	1.00E+02	---	**3E-03**	1.06E-01	-		---
METHYLENE CHLORIDE	75-09-2	5.50E-01	N	---	1.26E-01	6.00E+02	---	**2E-04**	4.48E-02	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	1.50E-01	Y	---	3.42E-02	3.00E+00	---	**1E-02**	1.22E-02	3.40E-05		**4E-07**
O-XYLENE	95-47-6	3.90E-01	Y	---	8.90E-02	1.00E+02	---	**9E-04**	3.18E-02	-		---
TETRACHLOROETHENE	127-18-4	3.90E+00	Y	---	8.90E-01	4.00E+01	---	**2E-02**	3.18E-01	2.60E-07		**8E-08**
TRICHLOROETHENE	79-01-6	5.90E-02	Y	---	1.35E-02	2.00E+00	---	**7E-03**	4.81E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	5.30E-02	Y	---	1.21E-02	8.00E+01	---	**2E-04**	4.32E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0121H**	**Total Inhalation**	---	**3E-01**	**1E-05**
		Based on NDs only	**0E+00**	**2E-01**	**6E-06**
		Based on Detects only	**#VALUE!**	**1E-01**	**4E-06**
		Site-related only	**0E+00**	**3E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0121H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.50E-01	NA	NA	NA	4.48E-02	1.0E-08		---	---	---	4E-10	**4E-10**
TRICHLOROETHENE	79-01-6	5.90E-02	NA	NA	NA	4.81E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	5.90E-02	NA		4.81E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	5.30E-02	NA	NA	NA	4.32E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0122H**

Pathway:
Inhalation of Indoor Air

			RME child	RME adult			RME lifetime			
		TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00E-02	N	---	4.57E-03	NA	---	---	1.63E-03	5.80E-05		**9E-08**
1,3-BUTADIENE	106-99-0	2.30E-01	Y	---	5.25E-02	2.00E+00	---	**3E-02**	1.88E-02	3.00E-05		**6E-07**
1,4-DIOXANE	123-91-1	1.70E-01	Y	---	3.88E-02	3.00E+01	---	**1E-03**	1.39E-02	5.00E-06		**7E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.90E-02	N	---	4.34E-03	2.00E-01	---	**2E-02**	1.55E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	---	1.37E-01	2.00E+00	---	**7E-02**	4.89E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.20E-01	Y	---	1.42E-01	6.00E+01	---	**2E-03**	5.06E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.50E-02	N	---	1.48E-02	9.00E+00	---	**2E-03**	5.30E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	8.60E-02	Y	---	1.96E-02	7.00E+00	---	**3E-03**	7.01E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	2.17E-02	4.00E+00	---	**5E-03**	7.75E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	---	2.63E-02	6.00E+01	---	**4E-04**	9.38E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	7.20E-02	Y	---	1.64E-02	8.00E+02	---	**2E-05**	5.87E-03	1.10E-05		**6E-08**
BENZENE	71-43-2	5.80E-01	Y	---	1.32E-01	3.00E+01	---	**4E-03**	4.73E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	2.25E-01	N	---	5.14E-02	1.00E+00	---	**5E-02**	1.83E-02	4.90E-05		**9E-07**
BROMODICHLOROMETHANE	75-27-4	2.30E-01	N	---	5.25E-02	NA	---	---	1.88E-02	3.70E-05		**7E-07**
BROMOMETHANE	74-83-9	7.50E-01	N	---	1.71E-01	5.00E+00	---	**3E-02**	6.12E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	---	1.10E-01	1.00E+02	---	**1E-03**	3.91E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	7.40E-01	Y	---	1.69E-01	9.77E+01	---	**2E-03**	6.03E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	6.30E+00	Y	---	1.44E+00	7.00E+01	---	**2E-02**	5.14E-01	-		**---**
ETHYLBENZENE	100-41-4	2.30E-01	Y	---	5.25E-02	1.00E+03	---	**5E-05**	1.88E-02	2.50E-06		**5E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	---	1.71E-01	NA	---	---	6.12E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	2.10E+01	Y	---	4.79E+00	2.00E+02	---	**2E-02**	1.71E+00	-		**---**
M,P-XYLENE	108-38-3	8.10E-01	Y	---	1.85E-01	1.00E+02	---	**2E-03**	6.60E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	7.00E-01	Y	---	1.60E-01	6.00E+02	---	**3E-04**	5.71E-02	1.00E-08	M	**6E-10**
NAPHTHALENE	91-20-3	2.80E-02	N	---	6.39E-03	3.00E+00	---	**2E-03**	2.28E-03	3.40E-05		**8E-08**
O-XYLENE	95-47-6	3.10E-01	Y	---	7.08E-02	1.00E+02	---	**7E-04**	2.53E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.80E+00	Y	---	1.10E+00	4.00E+01	---	**3E-02**	3.91E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	2.20E-02	Y	---	5.02E-03	2.00E+00	---	**3E-03**	1.79E-03	4.10E-06	M	**7E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	6.00E-03	N	---	1.37E-03	8.00E+01	---	**2E-05**	4.89E-04	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0122H**	**Total Inhalation**	**---**	**3E-01**	**9E-06**
		Based on NDs only	**0E+00**	**2E-01**	**6E-06**
		Based on Detects only	**#VALUE!**	**1E-01**	**3E-06**
		Site-related only	**0E+00**	**3E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0122H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.00E-01	NA	NA	NA	5.71E-02	1.0E-08		---	---	---	6E-10	**6E-10**
TRICHLOROETHENE	79-01-6	2.20E-02	NA	NA	NA	1.79E-03	1.0E-06	kidney	---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	2.20E-02	NA		1.79E-03		3.1E-06	NHL+liver	---		6E-09		**6E-09**
VINYL CHLORIDE	75-01-4	6.00E-03	NA	NA	NA	4.89E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0133H**

Pathway:
Inhalation of Indoor Air

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)		8.15E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	---	4.91E-03	NA	---	---	1.75E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	9.50E-02	N	---	2.17E-02	2.00E+00	---	**1E-02**	7.75E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	1.50E-01	Y	---	3.42E-02	3.00E+01	---	**1E-03**	1.22E-02	5.00E-06		**6E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	---	4.57E-03	2.00E-01	---	**2E-02**	1.63E-03	1.60E-05		**3E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	---	1.48E-01	2.00E+00	---	**7E-02**	5.30E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.00E-01	Y	---	1.14E-01	6.00E+01	---	**2E-03**	4.08E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	---	1.60E-02	9.00E+00	---	**2E-03**	5.71E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	2.50E-01	Y	---	5.71E-02	7.00E+00	---	**8E-03**	2.04E-02	2.60E-05		**5E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	---	2.28E-02	4.00E+00	---	**6E-03**	8.15E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	1.25E-01	N	---	2.85E-02	6.00E+01	---	**5E-04**	1.02E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	2.80E-02	Y	---	6.39E-03	8.00E+02	---	**8E-06**	2.28E-03	1.10E-05		**3E-08**
BENZENE	71-43-2	9.70E-01	Y	---	2.21E-01	3.00E+01	---	**7E-03**	7.91E-02	7.80E-06		**6E-07**
BENZYL CHLORIDE	100-44-7	2.40E-01	N	---	5.48E-02	1.00E+00	---	**5E-02**	1.96E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.10E+00	Y	---	2.51E-01	NA	---	---	8.97E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.83E-01	5.00E+00	---	**4E-02**	6.52E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	---	1.10E-01	1.00E+02	---	**1E-03**	3.91E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	4.70E+00	Y	---	1.07E+00	9.77E+01	---	**1E-02**	3.83E-01	2.30E-05		**9E-06**
ETHYL ACETATE	141-78-6	7.20E+00	Y	---	1.64E+00	7.00E+01	---	**2E-02**	5.87E-01	-		---
ETHYLBENZENE	100-41-4	3.50E-01	Y	---	7.99E-02	1.00E+03	---	**8E-05**	2.85E-02	2.50E-06		**7E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	---	1.83E-01	NA	---	---	6.52E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	2.50E+01	Y	---	5.71E+00	2.00E+02	---	**3E-02**	2.04E+00	-		---
M,P-XYLENE	108-38-3	1.10E+00	Y	---	2.51E-01	1.00E+02	---	**3E-03**	8.97E-02	-		---
METHYLENE CHLORIDE	75-09-2	8.40E-01	Y	---	1.92E-01	6.00E+02	---	**3E-04**	6.85E-02	1.00E-08	M	**7E-10**
NAPHTHALENE	91-20-3	2.65E-02	N	---	6.05E-03	3.00E+00	---	**2E-03**	2.16E-03	3.40E-05		**7E-08**
O-XYLENE	95-47-6	4.80E-01	Y	---	1.10E-01	1.00E+02	---	**1E-03**	3.91E-02	-		---
TETRACHLOROETHENE	127-18-4	3.90E-01	Y	---	8.90E-02	4.00E+01	---	**2E-03**	3.18E-02	2.60E-07		**8E-09**
TRICHLOROETHENE	79-01-6	2.40E-02	Y	---	5.48E-03	2.00E+00	---	**3E-03**	1.96E-03	4.10E-06	M	**8E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	6.50E-03	N	---	1.48E-03	8.00E+01	---	**2E-05**	5.30E-04	4.40E-06	M	**2E-09**

			HI$_{child}$	**HI$_{adult}$**	**Risk$_{lifetime}$**
Indoor Worker	**0133H**	**Total Inhalation**	---	**3E-01**	**2E-05**
		Based on NDs only	**0E+00**	**2E-01**	**6E-06**
		Based on Detects only	**#VALUE!**	**9E-02**	**1E-05**
		Site-related only	**0E+00**	**6E-03**	**8E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0133H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.40E-01	NA	NA	NA	6.85E-02	1.0E-08		---	---	---	7E-10	**7E-10**
TRICHLOROETHENE	79-01-6	2.40E-02	NA	NA	NA	1.96E-03	1.0E-06	kidney	---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	2.40E-02	NA		1.96E-03		3.1E-06	NHL+liver	---		6E-09		**6E-09**
VINYL CHLORIDE	75-01-4	6.50E-03	NA	NA	NA	5.30E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0135H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	4.05E-02	N	---	9.25E-03	NA	---	---	3.30E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	1.80E-01	N	---	4.11E-02	2.00E+00	---	**2E-02**	1.47E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	1.10E-01	N	---	2.51E-02	3.00E+01	---	**8E-04**	8.97E-03	5.00E-06		**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	3.75E-02	N	---	8.56E-03	2.00E-01	---	**4E-02**	3.06E-03	1.60E-05		**5E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.20E+00	N	---	2.74E-01	2.00E+00	---	**1E-01**	9.78E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.60E-01	Y	---	1.74E-01	6.00E+01	---	**3E-03**	6.20E-02	-		---
1,2-DIBROMOETHANE	106-93-4	1.35E-01	N	---	3.08E-02	9.00E+00	---	**3E-03**	1.10E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	1.60E-01	Y	---	3.65E-02	7.00E+00	---	**5E-03**	1.30E-02	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	1.90E-01	N	---	4.34E-02	4.00E+00	---	**1E-02**	1.55E-02	3.70E-06		**6E-08**
1,3,5-Trimethylbenzene	108-67-8	2.30E-01	N	---	5.25E-02	6.00E+01	---	**9E-04**	1.88E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	3.00E-02	Y	---	6.85E-03	8.00E+02	---	**9E-06**	2.45E-03	1.10E-05		**3E-08**
BENZENE	71-43-2	7.10E-01	Y	---	1.62E-01	3.00E+01	---	**5E-03**	5.79E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	4.50E-01	N	---	1.03E-01	1.00E+00	---	**1E-01**	3.67E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	4.60E-01	N	---	1.05E-01	NA	---	---	3.75E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	1.50E+00	N	---	3.42E-01	5.00E+00	---	**7E-02**	1.22E-01	-		---
CARBON TETRACHLORIDE	56-23-5	5.00E-01	Y	---	1.14E-01	1.00E+02	---	**1E-03**	4.08E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.70E+00	Y	---	3.88E-01	9.77E+01	---	**4E-03**	1.39E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	1.80E+01	Y	---	4.11E+00	7.00E+01	---	**6E-02**	1.47E+00	-		---
ETHYLBENZENE	100-41-4	1.20E+01	Y	---	2.74E+00	1.00E+03	---	**3E-03**	9.78E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.50E+00	N	---	3.42E-01	NA	---	---	1.22E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	1.40E+01	Y	---	3.20E+00	2.00E+02	---	**2E-02**	1.14E+00	-		---
M,P-XYLENE	108-38-3	4.10E+01	Y	---	9.36E+00	1.00E+02	---	**9E-02**	3.34E+00	-		---
METHYLENE CHLORIDE	75-09-2	6.00E-01	N	---	1.37E-01	6.00E+02	---	**2E-04**	4.89E-02	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	1.60E-01	Y	---	3.65E-02	3.00E+00	---	**1E-02**	1.30E-02	3.40E-05		**4E-07**
O-XYLENE	95-47-6	1.20E+01	Y	---	2.74E+00	1.00E+02	---	**3E-02**	9.78E-01	-		---
TETRACHLOROETHENE	127-18-4	4.50E-01	Y	---	1.03E-01	4.00E+01	---	**3E-03**	3.67E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	5.50E-02	N	---	1.26E-02	2.00E+00	---	**6E-03**	4.48E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	1.20E-02	N	---	2.74E-03	8.00E+01	---	**3E-05**	9.78E-04	4.40E-06	M	**4E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0135H**	**Total Inhalation**	---	**6E-01**	**2E-05**
		Based on NDs only	**0E+00**	**4E-01**	**1E-05**
		Based on Detects only	**#VALUE!**	**2E-01**	**7E-06**
		Site-related only	**0E+00**	**1E-02**	**8E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0135H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.00E-01	NA	NA	NA	4.89E-02	1.0E-08		---	---	---	5E-10	**5E-10**
TRICHLOROETHENE	79-01-6	5.50E-02	NA	NA	NA	4.48E-03	1.0E-06	kidney	---	---	---	4E-09	**4E-09**
TRICHLOROETHENE	79-01-6	5.50E-02	NA		4.48E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	1.20E-02	NA	NA	NA	9.78E-04	4.4E-06		---	---	---	4E-09	**4E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0137H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	---	4.91E-03	NA	---	---	1.75E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	9.50E-02	N	---	2.17E-02	2.00E+00	---	**1E-02**	7.75E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	1.80E-01	Y	---	4.11E-02	3.00E+01	---	**1E-03**	1.47E-02	5.00E-06		**7E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	---	4.57E-03	2.00E-01	---	**2E-02**	1.63E-03	1.60E-05		**3E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	---	1.48E-01	2.00E+00	---	**7E-02**	5.30E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.10E+00	Y	---	2.51E-01	6.00E+01	---	**4E-03**	8.97E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	---	1.60E-02	9.00E+00	---	**2E-03**	5.71E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	9.30E-02	Y	---	2.12E-02	7.00E+00	---	**3E-03**	7.58E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	---	2.28E-02	4.00E+00	---	**6E-03**	8.15E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	2.50E-01	Y	---	5.71E-02	6.00E+01	---	**1E-03**	2.04E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	---	1.83E-02	8.00E+02	---	**2E-05**	6.52E-03	1.10E-05		**7E-08**
BENZENE	71-43-2	3.30E+00	Y	---	7.53E-01	3.00E+01	---	**3E-02**	2.69E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	2.40E-01	N	---	5.48E-02	1.00E+00	---	**5E-02**	1.96E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	2.45E-01	N	---	5.59E-02	NA	---	---	2.00E-02	3.70E-05		**7E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.83E-01	5.00E+00	---	**4E-02**	6.52E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	---	1.10E-01	1.00E+02	---	**1E-03**	3.91E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.50E+00	Y	---	3.42E-01	9.77E+01	---	**4E-03**	1.22E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	5.20E+00	Y	---	1.19E+00	7.00E+01	---	**2E-02**	4.24E-01	-		---
ETHYLBENZENE	100-41-4	1.80E+00	Y	---	4.11E-01	1.00E+03	---	**4E-04**	1.47E-01	2.50E-06		**4E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	---	1.83E-01	NA	---	---	6.52E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	4.80E+00	Y	---	1.10E+00	2.00E+02	---	**5E-03**	3.91E-01	-		---
M,P-XYLENE	108-38-3	8.80E+00	Y	---	2.01E+00	1.00E+02	---	**2E-02**	7.18E-01	-		---
METHYLENE CHLORIDE	75-09-2	9.40E-01	Y	---	2.15E-01	6.00E+02	---	**4E-04**	7.66E-02	1.00E-08	M	**8E-10**
NAPHTHALENE	91-20-3	2.80E-02	N	---	6.39E-03	3.00E+00	---	**2E-03**	2.28E-03	3.40E-05		**8E-08**
O-XYLENE	95-47-6	2.30E+00	Y	---	5.25E-01	1.00E+02	---	**5E-03**	1.88E-01	-		---
TETRACHLOROETHENE	127-18-4	1.20E+00	Y	---	2.74E-01	4.00E+01	---	**7E-03**	9.78E-02	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	1.30E-01	Y	---	2.97E-02	2.00E+00	---	**1E-02**	1.06E-02	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	1.30E-02	Y	---	2.97E-03	8.00E+01	---	**4E-05**	1.06E-03	4.40E-06	M	**5E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0137H**	**Total Inhalation**	---	**3E-01**	**1E-05**
		Based on NDs only	**0E+00**	**2E-01**	**7E-06**
		Based on Detects only	**#VALUE!**	**1E-01**	**6E-06**
		Site-related only	**0E+00**	**2E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0137H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.40E-01	NA	NA	NA	7.66E-02	1.0E-08		---	---	---	8E-10	**8E-10**
TRICHLOROETHENE	79-01-6	1.30E-01	NA	NA	NA	1.06E-02	1.0E-06	kidney	---	---	---	1E-08	**1E-08**
TRICHLOROETHENE	79-01-6	1.30E-01	NA		1.06E-02		3.1E-06	NHL+liver	---		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	1.30E-02	NA	NA	NA	1.06E-03	4.4E-06		---	---	---	5E-09	**5E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0139H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.30E-02	N	---	5.25E-03	NA	---	---	1.88E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	1.30E+00	Y	---	2.97E-01	2.00E+00	---	**1E-01**	1.06E-01	3.00E-05		**3E-06**
1,4-DIOXANE	123-91-1	2.20E-01	Y	---	5.02E-02	3.00E+01	---	**2E-03**	1.79E-02	5.00E-06		**9E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.15E-02	N	---	4.91E-03	2.00E-01	---	**2E-02**	1.75E-03	1.60E-05		**3E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	---	1.60E-01	2.00E+00	---	**8E-02**	5.71E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.40E-01	Y	---	1.00E-01	6.00E+01	---	**2E-03**	3.59E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	---	1.71E-02	9.00E+00	---	**2E-03**	6.12E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	4.90E-01	Y	---	1.12E-01	7.00E+00	---	**2E-02**	4.00E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	1.10E-01	N	---	2.51E-02	4.00E+00	---	**6E-03**	8.97E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	---	2.97E-02	6.00E+01	---	**5E-04**	1.06E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	5.60E+01	Y	---	1.28E+01	8.00E+02	---	**2E-02**	4.57E+00	1.10E-05		**5E-05**
BENZENE	71-43-2	1.90E+00	Y	---	4.34E-01	3.00E+01	---	**1E-02**	1.55E-01	7.80E-06		**1E-06**
BENZYL CHLORIDE	100-44-7	2.60E-01	N	---	5.94E-02	1.00E+00	---	**6E-02**	2.12E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	2.60E-01	N	---	5.94E-02	NA	---	---	2.12E-02	3.70E-05		**8E-07**
BROMOMETHANE	74-83-9	1.90E+00	Y	---	4.34E-01	5.00E+00	---	**9E-02**	1.55E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	---	1.00E-01	1.00E+02	---	**1E-03**	3.59E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.00E+00	Y	---	2.28E-01	9.77E+01	---	**2E-03**	8.15E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	1.10E+01	Y	---	2.51E+00	7.00E+01	---	**4E-02**	8.97E-01	-		---
ETHYLBENZENE	100-41-4	5.30E-01	Y	---	1.21E-01	1.00E+03	---	**1E-04**	4.32E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	---	1.94E-01	NA	---	---	6.93E-02	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	3.60E+02	Y	---	8.22E+01	2.00E+02	---	**4E-01**	2.94E+01	-		---
M,P-XYLENE	108-38-3	1.70E+00	Y	---	3.88E-01	1.00E+02	---	**4E-03**	1.39E-01	-		---
METHYLENE CHLORIDE	75-09-2	3.45E-01	N	---	7.88E-02	6.00E+02	---	**1E-04**	2.81E-02	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	3.05E-02	N	---	6.96E-03	3.00E+00	---	**2E-03**	2.49E-03	3.40E-05		**8E-08**
O-XYLENE	95-47-6	4.40E-01	Y	---	1.00E-01	1.00E+02	---	**1E-03**	3.59E-02	-		---
TETRACHLOROETHENE	127-18-4	1.50E-01	Y	---	3.42E-02	4.00E+01	---	**9E-04**	1.22E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	---	1.14E-02	2.00E+00	---	**6E-03**	4.08E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	7.00E-03	N	---	1.60E-03	8.00E+01	---	**2E-05**	5.71E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0139H**	**Total Inhalation**	---	**9E-01**	**7E-05**
		Based on NDs only	**0E+00**	**2E-01**	**7E-06**
		Based on Detects only	**#VALUE!**	**7E-01**	**6E-05**
		Site-related only	**0E+00**	**8E-03**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0139H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.45E-01	NA	NA	NA	2.81E-02	1.0E-08		---	---	---	3E-10	**3E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	NA	NA	NA	4.08E-03	1.0E-06	kidney	---	---	---	4E-09	**4E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	NA		4.08E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	7.00E-03	NA	NA	NA	5.71E-04	4.4E-06		---	---	---	3E-09	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0145H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	---	2.51E-03	NA	---	---	8.97E-04	5.80E-05		**5E-08**
1,3-BUTADIENE	106-99-0	5.00E-02	N	---	1.14E-02	2.00E+00	---	**6E-03**	4.08E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	7.50E-02	N	---	1.71E-02	3.00E+01	---	**6E-04**	6.12E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	---	1.60E-03	2.00E-01	---	**8E-03**	5.71E-04	1.60E-05		**9E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.90E-01	N	---	1.12E-01	2.00E+00	---	**6E-02**	4.00E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.50E-01	Y	---	3.42E-02	6.00E+01	---	**6E-04**	1.22E-02	-		---
1,2-DIBROMOETHANE	106-93-4	3.35E-02	N	---	7.65E-03	9.00E+00	---	**8E-04**	2.73E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	8.30E-02	Y	---	1.89E-02	7.00E+00	---	**3E-03**	6.77E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	2.17E-02	4.00E+00	---	**5E-03**	7.75E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	---	1.37E-02	6.00E+01	---	**2E-04**	4.89E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	2.80E+00	Y	---	6.39E-01	8.00E+02	---	**8E-04**	2.28E-01	1.10E-05		**3E-06**
BENZENE	71-43-2	4.10E-01	Y	---	9.36E-02	3.00E+01	---	**3E-03**	3.34E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	---	1.94E-02	1.00E+00	---	**2E-02**	6.93E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	---	2.97E-02	NA	---	---	1.06E-02	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	6.50E-01	N	---	1.48E-01	5.00E+00	---	**3E-02**	5.30E-02	-		---
CARBON TETRACHLORIDE	56-23-5	7.60E-01	Y	---	1.74E-01	1.00E+02	---	**2E-03**	6.20E-02	6.00E-06		**4E-07**
CHLOROFORM	67-66-3	3.90E-01	Y	---	8.90E-02	9.77E+01	---	**9E-04**	3.18E-02	2.30E-05		**7E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.30E-01	Y	---	2.97E-02	1.00E+03	---	**3E-05**	1.06E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	---	1.48E-01	NA	---	---	5.30E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.50E+01	Y	---	3.42E+00	2.00E+02	---	**2E-02**	1.22E+00	-		---
M,P-XYLENE	108-38-3	4.10E-01	Y	---	9.36E-02	1.00E+02	---	**9E-04**	3.34E-02	-		---
METHYLENE CHLORIDE	75-09-2	4.30E+00	Y	---	9.82E-01	6.00E+02	---	**2E-03**	3.51E-01	1.00E-08	M	**4E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.50E-01	Y	---	3.42E-02	1.00E+02	---	**3E-04**	1.22E-02	-		---
TETRACHLOROETHENE	127-18-4	4.70E+00	Y	---	1.07E+00	4.00E+01	---	**3E-02**	3.83E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	4.50E-02	Y	---	1.03E-02	2.00E+00	---	**5E-03**	3.67E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.00E-03	N	---	1.83E-03	8.00E+01	---	**2E-05**	6.52E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0145H**	**Total Inhalation**	---	**2E-01**	**8E-06**
		Based on NDs only	**0E+00**	**1E-01**	**4E-06**
		Based on Detects only	**#VALUE!**	**6E-02**	**4E-06**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0145H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.30E+00	NA	NA	NA	3.51E-01	1.0E-08		---	---	---	4E-09	**4E-09**
TRICHLOROETHENE	79-01-6	4.50E-02	NA	NA	NA	3.67E-03	1.0E-06	kidney	---	---	---	4E-09	**4E-09**
TRICHLOROETHENE	79-01-6	4.50E-02	NA		3.67E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	8.00E-03	NA	NA	NA	6.52E-04	4.4E-06		---	---	---	3E-09	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0146H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.25E-02	N	---	5.14E-03	NA	---	---	1.83E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	1.00E-01	N	---	2.28E-02	2.00E+00	---	**1E-02**	8.15E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	2.30E-01	Y	---	5.25E-02	3.00E+01	---	**2E-03**	1.88E-02	5.00E-06		**9E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.10E-02	N	---	4.79E-03	2.00E-01	---	**2E-02**	1.71E-03	1.60E-05		**3E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.00E+00	N	---	2.28E-01	2.00E+00	---	**1E-01**	8.15E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.45E-01	N	---	3.31E-02	6.00E+01	---	**6E-04**	1.18E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	---	1.71E-02	9.00E+00	---	**2E-03**	6.12E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	---	3.20E-02	7.00E+00	---	**5E-03**	1.14E-02	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	1.90E-01	N	---	4.34E-02	4.00E+00	---	**1E-02**	1.55E-02	3.70E-06		**6E-08**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	---	2.97E-02	6.00E+01	---	**5E-04**	1.06E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	1.05E-01	N	---	2.40E-02	8.00E+02	---	**3E-05**	8.56E-03	1.10E-05		**9E-08**
BENZENE	71-43-2	6.80E-01	Y	---	1.55E-01	3.00E+01	---	**5E-03**	5.54E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	2.50E-01	N	---	5.71E-02	1.00E+00	---	**6E-02**	2.04E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	2.60E-01	N	---	5.94E-02	NA	---	---	2.12E-02	3.70E-05		**8E-07**
BROMOMETHANE	74-83-9	1.35E+00	N	---	3.08E-01	5.00E+00	---	**6E-02**	1.10E-01	-		---
CARBON TETRACHLORIDE	56-23-5	6.40E-01	Y	---	1.46E-01	1.00E+02	---	**1E-03**	5.22E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	1.30E+00	Y	---	2.97E-01	9.77E+01	---	**3E-03**	1.06E-01	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	3.00E+00	Y	---	6.85E-01	7.00E+01	---	**1E-02**	2.45E-01	-		---
ETHYLBENZENE	100-41-4	1.70E-01	Y	---	3.88E-02	1.00E+03	---	**4E-05**	1.39E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.35E+00	N	---	3.08E-01	NA	---	---	1.10E-01	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	9.00E+01	Y	---	2.05E+01	2.00E+02	---	**1E-01**	7.34E+00	-		---
M,P-XYLENE	108-38-3	5.30E-01	Y	---	1.21E-01	1.00E+02	---	**1E-03**	4.32E-02	-		---
METHYLENE CHLORIDE	75-09-2	3.35E-01	N	---	7.65E-02	6.00E+02	---	**1E-04**	2.73E-02	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	2.90E-02	N	---	6.62E-03	3.00E+00	---	**2E-03**	2.36E-03	3.40E-05		**8E-08**
O-XYLENE	95-47-6	2.20E-01	Y	---	5.02E-02	1.00E+02	---	**5E-04**	1.79E-02	-		---
TETRACHLOROETHENE	127-18-4	1.00E+01	Y	---	2.28E+00	4.00E+01	---	**6E-02**	8.15E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	2.80E-02	Y	---	6.39E-03	2.00E+00	---	**3E-03**	2.28E-03	4.10E-06	M	**9E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	1.65E-02	N	---	3.77E-03	8.00E+01	---	**5E-05**	1.35E-03	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0146H**	**Total Inhalation**	---	**5E-01**	**1E-05**
		Based on NDs only	**0E+00**	**3E-01**	**8E-06**
		Based on Detects only	**#VALUE!**	**2E-01**	**4E-06**
		Site-related only	**0E+00**	**6E-02**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0146H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.35E-01	NA	NA	NA	2.73E-02	1.0E-08		---	---	---	3E-10	**3E-10**
TRICHLOROETHENE	79-01-6	2.80E-02	NA	NA	NA	2.28E-03	1.0E-06	kidney	---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	2.80E-02	NA		2.28E-03		3.1E-06	NHL+liver	---		7E-09		**7E-09**
VINYL CHLORIDE	75-01-4	1.65E-02	NA	NA	NA	1.35E-03	4.4E-06		---	---	---	6E-09	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0148H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.20E-02	N	---	5.02E-03	NA	---	---	1.79E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	1.00E-01	N	---	2.28E-02	2.00E+00	---	**1E-02**	8.15E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	1.60E-01	Y	---	3.65E-02	3.00E+01	---	**1E-03**	1.30E-02	5.00E-06		**7E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.05E-02	N	---	4.68E-03	2.00E-01	---	**2E-02**	1.67E-03	1.60E-05		**3E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	---	1.48E-01	2.00E+00	---	**7E-02**	5.30E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E+00	Y	---	2.74E-01	6.00E+01	---	**5E-03**	9.78E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	---	1.71E-02	9.00E+00	---	**2E-03**	6.12E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	---	2.51E-02	7.00E+00	---	**4E-03**	8.97E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	---	2.40E-02	4.00E+00	---	**6E-03**	8.56E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	3.90E-01	Y	---	8.90E-02	6.00E+01	---	**1E-03**	3.18E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.10E-02	Y	---	9.36E-03	8.00E+02	---	**1E-05**	3.34E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	8.80E-01	Y	---	2.01E-01	3.00E+01	---	**7E-03**	7.18E-02	7.80E-06		**6E-07**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	---	5.59E-02	1.00E+00	---	**6E-02**	2.00E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	2.50E-01	N	---	5.71E-02	NA	---	---	2.04E-02	3.70E-05		**8E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.83E-01	5.00E+00	---	**4E-02**	6.52E-02	-		---
CARBON TETRACHLORIDE	56-23-5	5.60E-01	Y	---	1.28E-01	1.00E+02	---	**1E-03**	4.57E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	1.50E+00	Y	---	3.42E-01	9.77E+01	---	**4E-03**	1.22E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	8.40E+00	Y	---	1.92E+00	7.00E+01	---	**3E-02**	6.85E-01	-		---
ETHYLBENZENE	100-41-4	6.70E-01	Y	---	1.53E-01	1.00E+03	---	**2E-04**	5.46E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	---	1.83E-01	NA	---	---	6.52E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	6.30E+01	Y	---	1.44E+01	2.00E+02	---	**7E-02**	5.14E+00	-		---
M,P-XYLENE	108-38-3	2.00E+00	Y	---	4.57E-01	1.00E+02	---	**5E-03**	1.63E-01	-		---
METHYLENE CHLORIDE	75-09-2	4.40E+01	Y	---	1.00E+01	6.00E+02	---	**2E-02**	3.59E+00	1.00E-08	M	**4E-08**
NAPHTHALENE	91-20-3	5.70E-02	Y	---	1.30E-02	3.00E+00	---	**4E-03**	4.65E-03	3.40E-05		**2E-07**
O-XYLENE	95-47-6	7.80E-01	Y	---	1.78E-01	1.00E+02	---	**2E-03**	6.36E-02	-		---
TETRACHLOROETHENE	127-18-4	2.20E+00	Y	---	5.02E-01	4.00E+01	---	**1E-02**	1.79E-01	2.60E-07		**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	N	---	1.14E-02	2.00E+00	---	**6E-03**	4.08E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	6.50E-03	N	---	1.48E-03	8.00E+01	---	**2E-05**	5.30E-04	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0148H**	**Total Inhalation**	---	**4E-01**	**1E-05**
		Based on NDs only	**0E+00**	**2E-01**	**7E-06**
		Based on Detects only	**#VALUE!**	**2E-01**	**4E-06**
		Site-related only	**0E+00**	**2E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0148H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.40E+01	NA	NA	NA	3.59E+00	1.0E-08		---	---	---	4E-08	**4E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	NA	NA	NA	4.08E-03	1.0E-06	kidney	---	---	---	4E-09	**4E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	NA		4.08E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	6.50E-03	NA	NA	NA	5.30E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0153H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.05E-02	N	---	4.68E-03	NA	---	---	1.67E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	9.00E-02	N	---	2.05E-02	2.00E+00	---	**1E-02**	7.34E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	1.90E-01	Y	---	4.34E-02	3.00E+01	---	**1E-03**	1.55E-02	5.00E-06		**8E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.90E-02	N	---	4.34E-03	2.00E-01	---	**2E-02**	1.55E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	---	1.37E-01	2.00E+00	---	**7E-02**	4.89E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.40E-01	Y	---	1.00E-01	6.00E+01	---	**2E-03**	3.59E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	---	1.60E-02	9.00E+00	---	**2E-03**	5.71E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	---	2.51E-02	7.00E+00	---	**4E-03**	8.97E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	2.17E-02	4.00E+00	---	**5E-03**	7.75E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	---	2.63E-02	6.00E+01	---	**4E-04**	9.38E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	7.50E-02	N	---	1.71E-02	8.00E+02	---	**2E-05**	6.12E-03	1.10E-05		**7E-08**
BENZENE	71-43-2	7.10E-01	Y	---	1.62E-01	3.00E+01	---	**5E-03**	5.79E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	2.30E-01	N	---	5.25E-02	1.00E+00	---	**5E-02**	1.88E-02	4.90E-05		**9E-07**
BROMODICHLOROMETHANE	75-27-4	2.30E-01	N	---	5.25E-02	NA	---	---	1.88E-02	3.70E-05		**7E-07**
BROMOMETHANE	74-83-9	7.50E-01	N	---	1.71E-01	5.00E+00	---	**3E-02**	6.12E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	---	1.00E-01	1.00E+02	---	**1E-03**	3.59E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.10E+00	Y	---	2.51E-01	9.77E+01	---	**3E-03**	8.97E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	8.00E+00	Y	---	1.83E+00	7.00E+01	---	**3E-02**	6.52E-01	-		---
ETHYLBENZENE	100-41-4	2.80E-01	Y	---	6.39E-02	1.00E+03	---	**6E-05**	2.28E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	---	1.71E-01	NA	---	---	6.12E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	7.00E+01	Y	---	1.60E+01	2.00E+02	---	**8E-02**	5.71E+00	-		---
M,P-XYLENE	108-38-3	9.30E-01	Y	---	2.12E-01	1.00E+02	---	**2E-03**	7.58E-02	-		---
METHYLENE CHLORIDE	75-09-2	6.10E-01	Y	---	1.39E-01	6.00E+02	---	**2E-04**	4.97E-02	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	2.80E-02	N	---	6.39E-03	3.00E+00	---	**2E-03**	2.28E-03	3.40E-05		**8E-08**
O-XYLENE	95-47-6	3.20E-01	Y	---	7.31E-02	1.00E+02	---	**7E-04**	2.61E-02	-		---
TETRACHLOROETHENE	127-18-4	8.20E-01	Y	---	1.87E-01	4.00E+01	---	**5E-03**	6.69E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	N	---	1.14E-02	2.00E+00	---	**6E-03**	4.08E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	6.00E-03	N	---	1.37E-03	8.00E+01	---	**2E-05**	4.89E-04	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0153H**	**Total Inhalation**	---	**3E-01**	**1E-05**
		Based on NDs only	**0E+00**	**2E-01**	**7E-06**
		Based on Detects only	**#VALUE!**	**1E-01**	**3E-06**
		Site-related only	**0E+00**	**1E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0153H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.10E-01	NA	NA	NA	4.97E-02	1.0E-08		---	---	---	5E-10	**5E-10**
TRICHLOROETHENE	79-01-6	5.00E-02	NA	NA	NA	4.08E-03	1.0E-06	kidney	---	---	---	4E-09	**4E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	NA		4.08E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	6.00E-03	NA	NA	NA	4.89E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0162H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.50E-02	N	---	5.71E-03	NA	---	---	2.04E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	1.15E-01	N	---	2.63E-02	2.00E+00	---	**1E-02**	9.38E-03	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	2.00E-01	Y	---	4.57E-02	3.00E+01	---	**2E-03**	1.63E-02	5.00E-06		**8E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.35E-02	N	---	5.37E-03	2.00E-01	---	**3E-02**	1.92E-03	1.60E-05		**3E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	7.50E-01	N	---	1.71E-01	2.00E+00	---	**9E-02**	6.12E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E+00	Y	---	2.74E-01	6.00E+01	---	**5E-03**	9.78E-02	-		---
1,2-DIBROMOETHANE	106-93-4	8.50E-02	N	---	1.94E-02	9.00E+00	---	**2E-03**	6.93E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	9.60E-01	Y	---	2.19E-01	7.00E+00	---	**3E-02**	7.83E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	1.20E-01	N	---	2.74E-02	4.00E+00	---	**7E-03**	9.78E-03	3.70E-06		**4E-08**
1,3,5-Trimethylbenzene	108-67-8	2.90E-01	Y	---	6.62E-02	6.00E+01	---	**1E-03**	2.36E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	9.50E-02	N	---	2.17E-02	8.00E+02	---	**3E-05**	7.75E-03	1.10E-05		**9E-08**
BENZENE	71-43-2	2.50E+00	Y	---	5.71E-01	3.00E+01	---	**2E-02**	2.04E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	2.80E-01	N	---	6.39E-02	1.00E+00	---	**6E-02**	2.28E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	2.85E-01	N	---	6.51E-02	NA	---	---	2.32E-02	3.70E-05		**9E-07**
BROMOMETHANE	74-83-9	9.50E-01	N	---	2.17E-01	5.00E+00	---	**4E-02**	7.75E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	---	1.10E-01	1.00E+02	---	**1E-03**	3.91E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	6.80E-01	Y	---	1.55E-01	9.77E+01	---	**2E-03**	5.54E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	6.50E-01	Y	---	1.48E-01	7.00E+01	---	**2E-03**	5.30E-02	-		---
ETHYLBENZENE	100-41-4	1.20E+00	Y	---	2.74E-01	1.00E+03	---	**3E-04**	9.78E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	9.00E-01	N	---	2.05E-01	NA	---	---	7.34E-02	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	1.10E+01	Y	---	2.51E+00	2.00E+02	---	**1E-02**	8.97E-01	-		---
M,P-XYLENE	108-38-3	5.20E+00	Y	---	1.19E+00	1.00E+02	---	**1E-02**	4.24E-01	-		---
METHYLENE CHLORIDE	75-09-2	7.50E-01	Y	---	1.71E-01	6.00E+02	---	**3E-04**	6.12E-02	1.00E-08	M	**6E-10**
NAPHTHALENE	91-20-3	2.75E-02	N	---	6.28E-03	3.00E+00	---	**2E-03**	2.24E-03	3.40E-05		**8E-08**
O-XYLENE	95-47-6	1.50E+00	Y	---	3.42E-01	1.00E+02	---	**3E-03**	1.22E-01	-		---
TETRACHLOROETHENE	127-18-4	5.20E-01	Y	---	1.19E-01	4.00E+01	---	**3E-03**	4.24E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	2.90E-02	Y	---	6.62E-03	2.00E+00	---	**3E-03**	2.36E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	7.50E-03	N	---	1.71E-03	8.00E+01	---	**2E-05**	6.12E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0162H**	**Total Inhalation**	---	**3E-01**	**1E-05**
		Based on NDs only	**0E+00**	**2E-01**	**8E-06**
		Based on Detects only	**#VALUE!**	**1E-01**	**5E-06**
		Site-related only	**0E+00**	**8E-03**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0162H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.50E-01	NA	NA	NA	6.12E-02	1.0E-08		---	---	---	6E-10	**6E-10**
TRICHLOROETHENE	79-01-6	2.90E-02	NA	NA	NA	2.36E-03	1.0E-06	kidney	---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	2.90E-02	NA		2.36E-03		3.1E-06	NHL+liver	---		7E-09		**7E-09**
VINYL CHLORIDE	75-01-4	7.50E-03	NA	NA	NA	6.12E-04	4.4E-06		---	---	---	3E-09	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0166H**

Pathway:
Inhalation of Indoor Air

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)		8.15E-02			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00E-02	N	---	4.57E-03	NA	---	---	1.63E-03	5.80E-05		**9E-08**
1,3-BUTADIENE	106-99-0	9.00E-02	N	---	2.05E-02	2.00E+00	---	**1E-02**	7.34E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	1.50E-01	Y	---	3.42E-02	3.00E+01	---	**1E-03**	1.22E-02	5.00E-06		**6E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.85E-02	N	---	4.22E-03	2.00E-01	---	**2E-02**	1.51E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.10E+00	N	---	2.51E-01	2.00E+00	---	**1E-01**	8.97E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.20E-01	Y	---	7.31E-02	6.00E+01	---	**1E-03**	2.61E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.50E-02	N	---	1.48E-02	9.00E+00	---	**2E-03**	5.30E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	---	2.51E-02	7.00E+00	---	**4E-03**	8.97E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	2.17E-02	4.00E+00	---	**5E-03**	7.75E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	---	2.63E-02	6.00E+01	---	**4E-04**	9.38E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	7.50E-02	N	---	1.71E-02	8.00E+02	---	**2E-05**	6.12E-03	1.10E-05		**7E-08**
BENZENE	71-43-2	6.20E-01	Y	---	1.42E-01	3.00E+01	---	**5E-03**	5.06E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	2.25E-01	N	---	5.14E-02	1.00E+00	---	**5E-02**	1.83E-02	4.90E-05		**9E-07**
BROMODICHLOROMETHANE	75-27-4	2.25E-01	N	---	5.14E-02	NA	---	---	1.83E-02	3.70E-05		**7E-07**
BROMOMETHANE	74-83-9	7.50E-01	N	---	1.71E-01	5.00E+00	---	**3E-02**	6.12E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	---	1.07E-01	1.00E+02	---	**1E-03**	3.83E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.60E+00	Y	---	3.65E-01	9.77E+01	---	**4E-03**	1.30E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	1.40E+01	Y	---	3.20E+00	7.00E+01	---	**5E-02**	1.14E+00	-		---
ETHYLBENZENE	100-41-4	3.30E-01	Y	---	7.53E-02	1.00E+03	---	**8E-05**	2.69E-02	2.50E-06		**7E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	---	1.94E-01	NA	---	---	6.93E-02	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	3.80E+02	Y	---	8.68E+01	2.00E+02	---	**4E-01**	3.10E+01	-		---
M,P-XYLENE	108-38-3	1.10E+00	Y	---	2.51E-01	1.00E+02	---	**3E-03**	8.97E-02	-		---
METHYLENE CHLORIDE	75-09-2	1.60E+00	Y	---	3.65E-01	6.00E+02	---	**6E-04**	1.30E-01	1.00E-08	M	**1E-09**
NAPHTHALENE	91-20-3	2.95E-02	N	---	6.74E-03	3.00E+00	---	**2E-03**	2.41E-03	3.40E-05		**8E-08**
O-XYLENE	95-47-6	3.60E-01	Y	---	8.22E-02	1.00E+02	---	**8E-04**	2.94E-02	-		---
TETRACHLOROETHENE	127-18-4	5.70E+00	Y	---	1.30E+00	4.00E+01	---	**3E-02**	4.65E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	9.80E-01	Y	---	2.24E-01	2.00E+00	---	**1E-01**	7.99E-02	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	6.00E-03	N	---	1.37E-03	8.00E+01	---	**2E-05**	4.89E-04	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0166H**	**Total Inhalation**	---	**9E-01**	**1E-05**
		Based on NDs only	**0E+00**	**3E-01**	**7E-06**
		Based on Detects only	**#VALUE!**	**6E-01**	**4E-06**
		Site-related only	**0E+00**	**1E-01**	**5E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0166H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.60E+00	NA	NA	NA	1.30E-01	1.0E-08		---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	9.80E-01	NA	NA	NA	7.99E-02	1.0E-06	kidney	---	---	---	8E-08	**8E-08**
TRICHLOROETHENE	79-01-6	9.80E-01	NA		7.99E-02		3.1E-06	NHL+liver	---		2E-07		**2E-07**
VINYL CHLORIDE	75-01-4	6.00E-03	NA	NA	NA	4.89E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0172H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.30E-02	N	---	5.25E-03	NA	---	---	1.88E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	4.75E-02	N	---	1.08E-02	2.00E+00	---	**5E-03**	3.87E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	8.00E-02	N	---	1.83E-02	3.00E+01	---	**6E-04**	6.52E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.15E-02	N	---	2.63E-03	2.00E-01	---	**1E-02**	9.38E-04	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.75E-01	N	---	1.08E-01	2.00E+00	---	**5E-02**	3.87E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.20E-01	Y	---	1.19E-01	6.00E+01	---	**2E-03**	4.24E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.15E-02	N	---	9.47E-03	9.00E+00	---	**1E-03**	3.38E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	7.30E-02	Y	---	1.67E-02	7.00E+00	---	**2E-03**	5.95E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	---	2.05E-02	4.00E+00	---	**5E-03**	7.34E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	1.60E-01	Y	---	3.65E-02	6.00E+01	---	**6E-04**	1.30E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.35E-02	N	---	9.93E-03	8.00E+02	---	**1E-05**	3.55E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	3.40E-01	Y	---	7.76E-02	3.00E+01	---	**3E-03**	2.77E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	---	2.40E-02	1.00E+00	---	**2E-02**	8.56E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.05E-01	N	---	2.40E-02	NA	---	---	8.56E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	5.50E-01	N	---	1.26E-01	5.00E+00	---	**3E-02**	4.48E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	---	9.36E-02	1.00E+02	---	**9E-04**	3.34E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.40E-01	Y	---	3.20E-02	9.77E+01	---	**3E-04**	1.14E-02	2.30E-05		**3E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	9.80E-02	Y	---	2.24E-02	1.00E+03	---	**2E-05**	7.99E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.90E-01	N	---	8.90E-02	NA	---	---	3.18E-02	2.20E-05		**7E-07**
ISOPROPYL ALCOHOL	67-63-0	1.20E+01	Y	---	2.74E+00	2.00E+02	---	**1E-02**	9.78E-01	-		**---**
M,P-XYLENE	108-38-3	3.30E-01	Y	---	7.53E-02	1.00E+02	---	**8E-04**	2.69E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	5.40E-01	Y	---	1.23E-01	6.00E+02	---	**2E-04**	4.40E-02	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.20E-01	Y	---	2.74E-02	1.00E+02	---	**3E-04**	9.78E-03	-		**---**
TETRACHLOROETHENE	127-18-4	4.30E+00	Y	---	9.82E-01	4.00E+01	---	**2E-02**	3.51E-01	2.60E-07		**9E-08**
TRICHLOROETHENE	79-01-6	2.80E-02	Y	---	6.39E-03	2.00E+00	---	**3E-03**	2.28E-03	4.10E-06	M	**9E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	3.65E-03	N	---	8.33E-04	8.00E+01	---	**1E-05**	2.98E-04	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0172H**	**Total Inhalation**	**---**	**2E-01**	**5E-06**
		Based on NDs only	**0E+00**	**1E-01**	**4E-06**
		Based on Detects only	**#VALUE!**	**5E-02**	**1E-06**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0172H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.40E-01	NA	NA	NA	4.40E-02	1.0E-08		---	---	---	4E-10	**4E-10**
TRICHLOROETHENE	79-01-6	2.80E-02	NA	NA	NA	2.28E-03	1.0E-06	kidney	---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	2.80E-02	NA		2.28E-03		3.1E-06	NHL+liver	---		7E-09		**7E-09**
VINYL CHLORIDE	75-01-4	3.65E-03	NA	NA	NA	2.98E-04	4.4E-06		---	---	---	1E-09	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0173H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.20E-02	N	---	5.02E-03	NA	---	---	1.79E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	1.00E-01	N	---	2.28E-02	2.00E+00	---	**1E-02**	8.15E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	1.40E-01	Y	---	3.20E-02	3.00E+01	---	**1E-03**	1.14E-02	5.00E-06		**6E-08**
1,1,2-TRICHLOROETHANE	79-00-5	2.05E-02	N	---	4.68E-03	2.00E-01	---	**2E-02**	1.67E-03	1.60E-05		**3E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	---	1.48E-01	2.00E+00	---	**7E-02**	5.30E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.70E-01	Y	---	1.07E-01	6.00E+01	---	**2E-03**	3.83E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	---	1.60E-02	9.00E+00	---	**2E-03**	5.71E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	2.00E-01	Y	---	4.57E-02	7.00E+00	---	**7E-03**	1.63E-02	2.60E-05		**4E-07**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	---	2.40E-02	4.00E+00	---	**6E-03**	8.56E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	1.25E-01	N	---	2.85E-02	6.00E+01	---	**5E-04**	1.02E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	---	1.83E-02	8.00E+02	---	**2E-05**	6.52E-03	1.10E-05		**7E-08**
BENZENE	71-43-2	5.70E-01	Y	---	1.30E-01	3.00E+01	---	**4E-03**	4.65E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	---	5.59E-02	1.00E+00	---	**6E-02**	2.00E-02	4.90E-05		**1E-06**
BROMODICHLOROMETHANE	75-27-4	2.50E-01	N	---	5.71E-02	NA	---	---	2.04E-02	3.70E-05		**8E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.83E-01	5.00E+00	---	**4E-02**	6.52E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	---	1.03E-01	1.00E+02	---	**1E-03**	3.67E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	2.00E+00	Y	---	4.57E-01	9.77E+01	---	**5E-03**	1.63E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	7.00E+00	Y	---	1.60E+00	7.00E+01	---	**2E-02**	5.71E-01	-		---
ETHYLBENZENE	100-41-4	1.10E-01	Y	---	2.51E-02	1.00E+03	---	**3E-05**	8.97E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	---	1.83E-01	NA	---	---	6.52E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	2.70E+01	Y	---	6.16E+00	2.00E+02	---	**3E-02**	2.20E+00	-		---
M,P-XYLENE	108-38-3	4.50E-01	Y	---	1.03E-01	1.00E+02	---	**1E-03**	3.67E-02	-		---
METHYLENE CHLORIDE	75-09-2	3.25E-01	N	---	7.42E-02	6.00E+02	---	**1E-04**	2.65E-02	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	2.90E-02	N	---	6.62E-03	3.00E+00	---	**2E-03**	2.36E-03	3.40E-05		**8E-08**
O-XYLENE	95-47-6	2.10E-01	Y	---	4.79E-02	1.00E+02	---	**5E-04**	1.71E-02	-		---
TETRACHLOROETHENE	127-18-4	5.10E+00	Y	---	1.16E+00	4.00E+01	---	**3E-02**	4.16E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	1.20E-01	Y	---	2.74E-02	2.00E+00	---	**1E-02**	9.78E-03	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	6.50E-03	N	---	1.48E-03	8.00E+01	---	**2E-05**	5.30E-04	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0173H**	**Total Inhalation**	---	**3E-01**	**1E-05**
		Based on NDs only	**0E+00**	**2E-01**	**7E-06**
		Based on Detects only	**#VALUE!**	**1E-01**	**5E-06**
		Site-related only	**0E+00**	**4E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0173H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.25E-01	NA	NA	NA	2.65E-02	1.0E-08		---	---	---	3E-10	**3E-10**
TRICHLOROETHENE	79-01-6	1.20E-01	NA	NA	NA	9.78E-03	1.0E-06	kidney	---	---	---	1E-08	**1E-08**
TRICHLOROETHENE	79-01-6	1.20E-01	NA		9.78E-03		3.1E-06	NHL+liver	---		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	6.50E-03	NA	NA	NA	5.30E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0174H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00E-02	N	---	4.57E-03	NA	---	---	1.63E-03	5.80E-05		**9E-08**
1,3-BUTADIENE	106-99-0	9.00E-02	N	---	2.05E-02	2.00E+00	---	**1E-02**	7.34E-03	3.00E-05		**2E-07**
1,4-DIOXANE	123-91-1	5.50E-01	Y	---	1.26E-01	3.00E+01	---	**4E-03**	4.48E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.85E-02	N	---	4.22E-03	2.00E-01	---	**2E-02**	1.51E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	---	1.37E-01	2.00E+00	---	**7E-02**	4.89E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	6.40E-01	Y	---	1.46E-01	6.00E+01	---	**2E-03**	5.22E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.50E-02	N	---	1.48E-02	9.00E+00	---	**2E-03**	5.30E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	2.20E+00	Y	---	5.02E-01	7.00E+00	---	**7E-02**	1.79E-01	2.60E-05		**5E-06**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	2.17E-02	4.00E+00	---	**5E-03**	7.75E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	2.20E-01	Y	---	5.02E-02	6.00E+01	---	**8E-04**	1.79E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	1.70E-01	Y	---	3.88E-02	8.00E+02	---	**5E-05**	1.39E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	9.30E-01	Y	---	2.12E-01	3.00E+01	---	**7E-03**	7.58E-02	7.80E-06		**6E-07**
BENZYL CHLORIDE	100-44-7	2.25E-01	N	---	5.14E-02	1.00E+00	---	**5E-02**	1.83E-02	4.90E-05		**9E-07**
BROMODICHLOROMETHANE	75-27-4	1.00E+00	Y	---	2.28E-01	NA	---	---	8.15E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	7.50E-01	N	---	1.71E-01	5.00E+00	---	**3E-02**	6.12E-02	-		---
CARBON TETRACHLORIDE	56-23-5	7.10E-01	Y	---	1.62E-01	1.00E+02	---	**2E-03**	5.79E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	4.20E+00	Y	---	9.59E-01	9.77E+01	---	**1E-02**	3.42E-01	2.30E-05		**8E-06**
ETHYL ACETATE	141-78-6	1.00E+01	Y	---	2.28E+00	7.00E+01	---	**3E-02**	8.15E-01	-		---
ETHYLBENZENE	100-41-4	2.30E+00	Y	---	5.25E-01	1.00E+03	---	**5E-04**	1.88E-01	2.50E-06		**5E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	---	1.71E-01	NA	---	---	6.12E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.80E+01	Y	---	4.11E+00	2.00E+02	---	**2E-02**	1.47E+00	-		---
M,P-XYLENE	108-38-3	8.20E+00	Y	---	1.87E+00	1.00E+02	---	**2E-02**	6.69E-01	-		---
METHYLENE CHLORIDE	75-09-2	2.20E+00	Y	---	5.02E-01	6.00E+02	---	**8E-04**	1.79E-01	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	2.90E-02	N	---	6.62E-03	3.00E+00	---	**2E-03**	2.36E-03	3.40E-05		**8E-08**
O-XYLENE	95-47-6	2.30E+00	Y	---	5.25E-01	1.00E+02	---	**5E-03**	1.88E-01	-		---
TETRACHLOROETHENE	127-18-4	1.70E+00	Y	---	3.88E-01	4.00E+01	---	**1E-02**	1.39E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	N	---	1.14E-02	2.00E+00	---	**6E-03**	4.08E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	1.00E-01	Y	---	2.28E-02	8.00E+01	---	**3E-04**	8.15E-03	4.40E-06	M	**4E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0174H**	**Total Inhalation**	---	**4E-01**	**2E-05**
		Based on NDs only	**0E+00**	**2E-01**	**6E-06**
		Based on Detects only	**#VALUE!**	**2E-01**	**2E-05**
		Site-related only	**0E+00**	**2E-02**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0174H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.20E+00	NA	NA	NA	1.79E-01	1.0E-08		---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	NA	NA	NA	4.08E-03	1.0E-06	kidney	---	---	---	4E-09	**4E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	NA		4.08E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	1.00E-01	NA	NA	NA	8.15E-03	4.4E-06		---	---	---	4E-08	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0180H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.65E-02	N	---	6.05E-03	NA	---	---	2.16E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	5.50E-02	N	---	1.26E-02	2.00E+00	---	**6E-03**	4.48E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	2.05E-02	3.00E+01	---	**7E-04**	7.34E-03	5.00E-06		**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.30E-02	N	---	2.97E-03	2.00E-01	---	**1E-02**	1.06E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.50E-01	N	---	1.26E-01	2.00E+00	---	**6E-02**	4.48E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.00E-02	N	---	1.37E-02	6.00E+01	---	**2E-04**	4.89E-03	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.70E-02	N	---	1.07E-02	9.00E+00	---	**1E-03**	3.83E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	7.30E-02	Y	---	1.67E-02	7.00E+00	---	**2E-03**	5.95E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	---	2.40E-02	4.00E+00	---	**6E-03**	8.56E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	9.00E-02	N	---	2.05E-02	6.00E+01	---	**3E-04**	7.34E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.95E-02	N	---	1.13E-02	8.00E+02	---	**1E-05**	4.04E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	3.70E-01	Y	---	8.45E-02	3.00E+01	---	**3E-03**	3.02E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	1.15E-01	N	---	2.63E-02	1.00E+00	---	**3E-02**	9.38E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	1.20E-01	N	---	2.74E-02	NA	---	---	9.78E-03	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	6.50E-01	N	---	1.48E-01	5.00E+00	---	**3E-02**	5.30E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	---	9.59E-02	1.00E+02	---	**1E-03**	3.42E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.30E-01	Y	---	2.97E-02	9.77E+01	---	**3E-04**	1.06E-02	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	5.60E-02	Y	---	1.28E-02	1.00E+03	---	**1E-05**	4.57E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.45E-01	N	---	1.02E-01	NA	---	---	3.63E-02	2.20E-05		**8E-07**
ISOPROPYL ALCOHOL	67-63-0	1.30E+01	Y	---	2.97E+00	2.00E+02	---	**1E-02**	1.06E+00	-		**---**
M,P-XYLENE	108-38-3	1.90E-01	Y	---	4.34E-02	1.00E+02	---	**4E-04**	1.55E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	6.80E-01	Y	---	1.55E-01	6.00E+02	---	**3E-04**	5.54E-02	1.00E-08	M	**6E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	6.10E-02	Y	---	1.39E-02	1.00E+02	---	**1E-04**	4.97E-03	-		**---**
TETRACHLOROETHENE	127-18-4	4.40E-02	Y	---	1.00E-02	4.00E+01	---	**3E-04**	3.59E-03	2.60E-07		**9E-10**
TRICHLOROETHENE	79-01-6	9.00E-03	N	---	2.05E-03	2.00E+00	---	**1E-03**	7.34E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	4.20E-03	N	---	9.59E-04	8.00E+01	---	**1E-05**	3.42E-04	4.40E-06	M	**2E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0180H**	**Total Inhalation**	**---**	**2E-01**	**5E-06**
		Based on NDs only	**0E+00**	**1E-01**	**4E-06**
		Based on Detects only	**#VALUE!**	**2E-02**	**9E-07**
		Site-related only	**0E+00**	**2E-03**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0180H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.80E-01	NA	NA	NA	5.54E-02	1.0E-08		---	---	---	6E-10	**6E-10**
TRICHLOROETHENE	79-01-6	9.00E-03	NA	NA	NA	7.34E-04	1.0E-06	kidney	---	---	---	7E-10	**7E-10**
TRICHLOROETHENE	79-01-6	9.00E-03	NA		7.34E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	4.20E-03	NA	NA	NA	3.42E-04	4.4E-06		---	---	---	2E-09	**2E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0189H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	---	2.40E-03	NA	---	---	8.56E-04	5.80E-05		**5E-08**
1,3-BUTADIENE	106-99-0	4.95E-02	N	---	1.13E-02	2.00E+00	---	**6E-03**	4.04E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	7.00E-02	N	---	1.60E-02	3.00E+01	---	**5E-04**	5.71E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	---	1.60E-03	2.00E-01	---	**8E-03**	5.71E-04	1.60E-05		**9E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.85E-01	N	---	1.11E-01	2.00E+00	---	**6E-02**	3.95E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.30E-01	Y	---	2.97E-02	6.00E+01	---	**5E-04**	1.06E-02	-		---
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	---	7.53E-03	9.00E+00	---	**8E-04**	2.69E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	7.40E-02	Y	---	1.69E-02	7.00E+00	---	**2E-03**	6.03E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	---	2.05E-02	4.00E+00	---	**5E-03**	7.34E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	---	1.37E-02	6.00E+01	---	**2E-04**	4.89E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	---	1.14E-02	8.00E+02	---	**1E-05**	4.08E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	4.10E-01	Y	---	9.36E-02	3.00E+01	---	**3E-03**	3.34E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	---	1.94E-02	1.00E+00	---	**2E-02**	6.93E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	---	2.85E-02	NA	---	---	1.02E-02	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	6.50E-01	N	---	1.48E-01	5.00E+00	---	**3E-02**	5.30E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	---	1.07E-01	1.00E+02	---	**1E-03**	3.83E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	8.40E-01	Y	---	1.92E-01	9.77E+01	---	**2E-03**	6.85E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.70E-01	Y	---	3.88E-02	1.00E+03	---	**4E-05**	1.39E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	---	1.48E-01	NA	---	---	5.30E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	2.40E+02	Y	---	5.48E+01	2.00E+02	---	**3E-01**	1.96E+01	-		---
M,P-XYLENE	108-38-3	4.80E-01	Y	---	1.10E-01	1.00E+02	---	**1E-03**	3.91E-02	-		---
METHYLENE CHLORIDE	75-09-2	2.15E-01	N	---	4.91E-02	6.00E+02	---	**8E-05**	1.75E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.70E-01	Y	---	3.88E-02	1.00E+02	---	**4E-04**	1.39E-02	-		---
TETRACHLOROETHENE	127-18-4	2.60E+00	Y	---	5.94E-01	4.00E+01	---	**1E-02**	2.12E-01	2.60E-07		**6E-08**
TRICHLOROETHENE	79-01-6	1.90E-01	Y	---	4.34E-02	2.00E+00	---	**2E-02**	1.55E-02	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.00E-03	N	---	1.83E-03	8.00E+01	---	**2E-05**	6.52E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0189H**	**Total Inhalation**	---	**4E-01**	**6E-06**
		Based on NDs only	**0E+00**	**1E-01**	**4E-06**
		Based on Detects only	**#VALUE!**	**3E-01**	**2E-06**
		Site-related only	**0E+00**	**4E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0189H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.15E-01	NA	NA	NA	1.75E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	1.90E-01	NA	NA	NA	1.55E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	1.90E-01	NA		1.55E-02		3.1E-06	NHL+liver	---		5E-08		**5E-08**
VINYL CHLORIDE	75-01-4	8.00E-03	NA	NA	NA	6.52E-04	4.4E-06		---	---	---	3E-09	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0192H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	---	2.51E-03	NA	---	---	8.97E-04	5.80E-05		**5E-08**
1,3-BUTADIENE	106-99-0	5.00E-02	N	---	1.14E-02	2.00E+00	---	**6E-03**	4.08E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	7.50E-02	N	---	1.71E-02	3.00E+01	---	**6E-04**	6.12E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	---	1.71E-03	2.00E-01	---	**9E-03**	6.12E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	---	1.14E-01	2.00E+00	---	**6E-02**	4.08E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.30E-01	Y	---	2.97E-02	6.00E+01	---	**5E-04**	1.06E-02	-		---
1,2-DIBROMOETHANE	106-93-4	3.50E-02	N	---	7.99E-03	9.00E+00	---	**9E-04**	2.85E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	---	1.76E-02	7.00E+00	---	**3E-03**	6.28E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	2.17E-02	4.00E+00	---	**5E-03**	7.75E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	---	1.37E-02	6.00E+01	---	**2E-04**	4.89E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	---	1.26E-02	8.00E+02	---	**2E-05**	4.48E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	1.10E+00	Y	---	2.51E-01	3.00E+01	---	**8E-03**	8.97E-02	7.80E-06		**7E-07**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	---	2.05E-02	1.00E+00	---	**2E-02**	7.34E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	---	2.97E-02	NA	---	---	1.06E-02	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	---	1.60E-01	5.00E+00	---	**3E-02**	5.71E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	---	1.07E-01	1.00E+02	---	**1E-03**	3.83E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.30E+00	Y	---	2.97E-01	9.77E+01	---	**3E-03**	1.06E-01	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.00E-01	Y	---	4.57E-02	1.00E+03	---	**5E-05**	1.63E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	---	1.60E-01	NA	---	---	5.71E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.20E+01	Y	---	2.74E+00	2.00E+02	---	**1E-02**	9.78E-01	-		---
M,P-XYLENE	108-38-3	6.00E-01	Y	---	1.37E-01	1.00E+02	---	**1E-03**	4.89E-02	-		---
METHYLENE CHLORIDE	75-09-2	2.25E-01	N	---	5.14E-02	6.00E+02	---	**9E-05**	1.83E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.20E-01	Y	---	5.02E-02	1.00E+02	---	**5E-04**	1.79E-02	-		---
TETRACHLOROETHENE	127-18-4	1.60E+01	Y	---	3.65E+00	4.00E+01	---	**9E-02**	1.30E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	4.30E-01	Y	---	9.82E-02	2.00E+00	---	**5E-02**	3.51E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.50E-03	N	---	1.94E-03	8.00E+01	---	**2E-05**	6.93E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0192H**	**Total Inhalation**	---	**3E-01**	**8E-06**
		Based on NDs only	**0E+00**	**1E-01**	**4E-06**
		Based on Detects only	**#VALUE!**	**2E-01**	**4E-06**
		Site-related only	**0E+00**	**1E-01**	**5E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0192H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.25E-01	NA	NA	NA	1.83E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	4.30E-01	NA	NA	NA	3.51E-02	1.0E-06	kidney	---	---	---	4E-08	**4E-08**
TRICHLOROETHENE	79-01-6	4.30E-01	NA		3.51E-02		3.1E-06	NHL+liver	---		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	8.50E-03	NA	NA	NA	6.93E-04	4.4E-06		---	---	---	3E-09	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0193H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	---	1.56E-02	NA	---	---	5.59E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	2.22E+00	N	---	5.06E-01	2.00E+00	---	**3E-01**	1.81E-01	3.00E-05		**5E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	---	8.23E-02	3.00E+01	---	**3E-03**	2.94E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	---	1.86E-02	2.00E-01	---	**9E-02**	6.65E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	---	5.32E-01	2.00E+00	---	**3E-01**	1.90E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	---	1.12E-01	6.00E+01	---	**2E-03**	4.00E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	---	1.76E-02	9.00E+00	---	**2E-03**	6.28E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	1.02E-01	Y	---	2.33E-02	7.00E+00	---	**3E-03**	8.32E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	---	1.59E-02	4.00E+00	---	**4E-03**	5.67E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	---	1.12E-01	6.00E+01	---	**2E-03**	4.00E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	---	1.37E-02	8.00E+02	---	**2E-05**	4.89E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	4.89E-01	Y	---	1.12E-01	3.00E+01	---	**4E-03**	3.99E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	---	1.19E-01	1.00E+00	---	**1E-01**	4.24E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	---	1.53E-01	NA	---	---	5.46E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	---	8.86E-02	5.00E+00	---	**2E-02**	3.16E-02	-		---
CARBON TETRACHLORIDE	56-23-5	5.74E-01	Y	---	1.31E-01	1.00E+02	---	**1E-03**	4.68E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	1.55E+00	Y	---	3.54E-01	9.77E+01	---	**4E-03**	1.26E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.86E-01	Y	---	4.25E-02	1.00E+03	---	**4E-05**	1.52E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	---	7.68E-01	NA	---	---	2.74E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	1.15E+01	Y	---	2.63E+00	2.00E+02	---	**1E-02**	9.38E-01	-		---
M,P-XYLENE	108-38-3	6.76E-01	Y	---	1.54E-01	1.00E+02	---	**2E-03**	5.51E-02	-		---
METHYLENE CHLORIDE	75-09-2	6.74E-01	Y	---	1.54E-01	6.00E+02	---	**3E-04**	5.50E-02	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	---	3.77E-01	3.00E+00	---	**1E-01**	1.35E-01	3.40E-05		**5E-06**
O-XYLENE	95-47-6	4.34E-01	N	---	9.90E-02	1.00E+02	---	**1E-03**	3.53E-02	-		---
TETRACHLOROETHENE	127-18-4	3.82E+00	Y	---	8.72E-01	4.00E+01	---	**2E-02**	3.11E-01	2.60E-07		**8E-08**
TRICHLOROETHENE	79-01-6	7.18E-01	Y	---	1.64E-01	2.00E+00	---	**8E-02**	5.85E-02	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	3.52E-02	N	---	8.04E-03	2.00E+02	---	**4E-05**	2.87E-03	-		---
VINYL CHLORIDE	75-01-4	2.56E-02	N	---	5.83E-03	8.00E+01	---	**7E-05**	2.08E-03	4.40E-06	M	**9E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0193H**	**Total Inhalation**	---	**1E+00**	**3E-05**
		Based on NDs only	**0E+00**	**9E-01**	**2E-05**
		Based on Detects only	**#VALUE!**	**1E-01**	**4E-06**
		Site-related only	**0E+00**	**1E-01**	**5E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0193H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.74E-01	NA	NA	NA	5.50E-02	1.0E-08		---	---	---	5E-10	**5E-10**
TRICHLOROETHENE	79-01-6	7.18E-01	NA	NA	NA	5.85E-02	1.0E-06	kidney	---	---	---	6E-08	**6E-08**
TRICHLOROETHENE	79-01-6	7.18E-01	NA		5.85E-02		3.1E-06	NHL+liver	---		2E-07		**2E-07**
VINYL CHLORIDE	75-01-4	2.56E-02	NA	NA	NA	2.08E-03	4.4E-06		---	---	---	9E-09	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0194H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	---	1.56E-02	NA	---	---	5.59E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	2.22E+00	N	---	5.06E-01	2.00E+00	---	**3E-01**	1.81E-01	3.00E-05		**5E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	---	8.23E-02	3.00E+01	---	**3E-03**	2.94E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	---	1.86E-02	2.00E-01	---	**9E-02**	6.65E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	---	5.32E-01	2.00E+00	---	**3E-01**	1.90E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	---	1.12E-01	6.00E+01	---	**2E-03**	4.00E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	---	1.76E-02	9.00E+00	---	**2E-03**	6.28E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	1.22E-01	Y	---	2.79E-02	7.00E+00	---	**4E-03**	9.95E-03	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	---	1.59E-02	4.00E+00	---	**4E-03**	5.67E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	---	1.12E-01	6.00E+01	---	**2E-03**	4.00E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	---	1.37E-02	8.00E+02	---	**2E-05**	4.89E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	5.69E-01	Y	---	1.30E-01	3.00E+01	---	**4E-03**	4.64E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	---	1.19E-01	1.00E+00	---	**1E-01**	4.24E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	---	1.53E-01	NA	---	---	5.46E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	---	8.86E-02	5.00E+00	---	**2E-02**	3.16E-02	-		---
CARBON TETRACHLORIDE	56-23-5	5.46E-01	Y	---	1.25E-01	1.00E+02	---	**1E-03**	4.45E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	7.40E-01	Y	---	1.69E-01	9.77E+01	---	**2E-03**	6.03E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	4.23E-01	Y	---	9.66E-02	1.00E+03	---	**1E-04**	3.45E-02	2.50E-06		**9E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	---	7.68E-01	NA	---	---	2.74E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	9.27E+00	Y	---	2.12E+00	2.00E+02	---	**1E-02**	7.56E-01	-		---
M,P-XYLENE	108-38-3	1.14E+00	Y	---	2.60E-01	1.00E+02	---	**3E-03**	9.30E-02	-		---
METHYLENE CHLORIDE	75-09-2	6.67E-01	Y	---	1.52E-01	6.00E+02	---	**3E-04**	5.44E-02	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	---	3.77E-01	3.00E+00	---	**1E-01**	1.35E-01	3.40E-05		**5E-06**
O-XYLENE	95-47-6	4.34E-01	N	---	9.90E-02	1.00E+02	---	**1E-03**	3.53E-02	-		---
TETRACHLOROETHENE	127-18-4	1.06E+01	Y	---	2.42E+00	4.00E+01	---	**6E-02**	8.64E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	7.18E-01	Y	---	1.64E-01	2.00E+00	---	**8E-02**	5.85E-02	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	3.52E-02	N	---	8.04E-03	2.00E+02	---	**4E-05**	2.87E-03	-		---
VINYL CHLORIDE	75-01-4	2.56E-02	N	---	5.83E-03	8.00E+01	---	**7E-05**	2.08E-03	4.40E-06	M	**9E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0194H**	**Total Inhalation**	---	**1E+00**	**3E-05**
		Based on NDs only	**0E+00**	**9E-01**	**2E-05**
		Based on Detects only	**#VALUE!**	**2E-01**	**3E-06**
		Site-related only	**0E+00**	**1E-01**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0194H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.67E-01	NA	NA	NA	5.44E-02	1.0E-08		---	---	---	5E-10	**5E-10**
TRICHLOROETHENE	79-01-6	7.18E-01	NA	NA	NA	5.85E-02	1.0E-06	kidney	---	---	---	6E-08	**6E-08**
TRICHLOROETHENE	79-01-6	7.18E-01	NA		5.85E-02		3.1E-06	NHL+liver	---		2E-07		**2E-07**
VINYL CHLORIDE	75-01-4	2.56E-02	NA	NA	NA	2.08E-03	4.4E-06		---	---	---	9E-09	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0195H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	---	1.56E-02	NA	---	---	5.59E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	2.22E+00	N	---	5.06E-01	2.00E+00	---	**3E-01**	1.81E-01	3.00E-05		**5E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	---	8.23E-02	3.00E+01	---	**3E-03**	2.94E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	---	1.86E-02	2.00E-01	---	**9E-02**	6.65E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	---	5.32E-01	2.00E+00	---	**3E-01**	1.90E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.35E+00	Y	---	1.22E+00	6.00E+01	---	**2E-02**	4.36E-01	-		---
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	---	1.76E-02	9.00E+00	---	**2E-03**	6.28E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	1.24E-01	Y	---	2.83E-02	7.00E+00	---	**4E-03**	1.01E-02	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	---	1.59E-02	4.00E+00	---	**4E-03**	5.67E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	1.59E+00	Y	---	3.63E-01	6.00E+01	---	**6E-03**	1.30E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	---	1.37E-02	8.00E+02	---	**2E-05**	4.89E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	6.26E-01	Y	---	1.43E-01	3.00E+01	---	**5E-03**	5.10E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	---	1.19E-01	1.00E+00	---	**1E-01**	4.24E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	---	1.53E-01	NA	---	---	5.46E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	---	8.86E-02	5.00E+00	---	**2E-02**	3.16E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.96E-01	Y	---	1.13E-01	1.00E+02	---	**1E-03**	4.04E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	5.55E-01	Y	---	1.27E-01	9.77E+01	---	**1E-03**	4.53E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	7.33E-01	Y	---	1.67E-01	1.00E+03	---	**2E-04**	5.98E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	---	7.68E-01	NA	---	---	2.74E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	2.05E+01	Y	---	4.68E+00	2.00E+02	---	**2E-02**	1.67E+00	-		---
M,P-XYLENE	108-38-3	2.76E+00	Y	---	6.30E-01	1.00E+02	---	**6E-03**	2.25E-01	-		---
METHYLENE CHLORIDE	75-09-2	5.69E-01	Y	---	1.30E-01	6.00E+02	---	**2E-04**	4.64E-02	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	---	3.77E-01	3.00E+00	---	**1E-01**	1.35E-01	3.40E-05		**5E-06**
O-XYLENE	95-47-6	1.44E+00	Y	---	3.29E-01	1.00E+02	---	**3E-03**	1.17E-01	-		---
TETRACHLOROETHENE	127-18-4	2.27E+00	Y	---	5.18E-01	4.00E+01	---	**1E-02**	1.85E-01	2.60E-07		**5E-08**
TRICHLOROETHENE	79-01-6	5.95E-02	Y	---	1.36E-02	2.00E+00	---	**7E-03**	4.85E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	---	8.04E-03	2.00E+02	---	**4E-05**	2.87E-03	-		---
VINYL CHLORIDE	75-01-4	2.56E-02	N	---	5.83E-03	8.00E+01	---	**7E-05**	2.08E-03	4.40E-06	M	**9E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0195H**	**Total Inhalation**	---	**1E+00**	**3E-05**
		Based on NDs only	**0E+00**	**9E-01**	**2E-05**
		Based on Detects only	**#VALUE!**	**9E-02**	**2E-06**
		Site-related only	**0E+00**	**2E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0195H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.69E-01	NA	NA	NA	4.64E-02	1.0E-08		---	---	---	5E-10	**5E-10**
TRICHLOROETHENE	79-01-6	5.95E-02	NA	NA	NA	4.85E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	5.95E-02	NA		4.85E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	NA	NA	NA	2.08E-03	4.4E-06		---	---	---	9E-09	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0197H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.50E-02	N	---	5.71E-03	NA	---	---	2.04E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	5.00E-02	N	---	1.14E-02	2.00E+00	---	**6E-03**	4.08E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	8.50E-02	N	---	1.94E-02	3.00E+01	---	**6E-04**	6.93E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	---	2.74E-03	2.00E-01	---	**1E-02**	9.78E-04	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	---	1.14E-01	2.00E+00	---	**6E-02**	4.08E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.20E-01	Y	---	5.02E-02	6.00E+01	---	**8E-04**	1.79E-02	-		---
1,2-DIBROMOETHANE	106-93-4	4.45E-02	N	---	1.02E-02	9.00E+00	---	**1E-03**	3.63E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	8.50E-02	Y	---	1.94E-02	7.00E+00	---	**3E-03**	6.93E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	---	2.28E-02	4.00E+00	---	**6E-03**	8.15E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	8.50E-02	N	---	1.94E-02	6.00E+01	---	**3E-04**	6.93E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	2.10E-01	Y	---	4.79E-02	8.00E+02	---	**6E-05**	1.71E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	4.30E-01	Y	---	9.82E-02	3.00E+01	---	**3E-03**	3.51E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	---	2.51E-02	1.00E+00	---	**3E-02**	8.97E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	---	2.51E-02	NA	---	---	8.97E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	6.00E-01	N	---	1.37E-01	5.00E+00	---	**3E-02**	4.89E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	---	1.00E-01	1.00E+02	---	**1E-03**	3.59E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.10E+00	Y	---	2.51E-01	9.77E+01	---	**3E-03**	8.97E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	3.50E-01	Y	---	7.99E-02	1.00E+03	---	**8E-05**	2.85E-02	2.50E-06		**7E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.25E-01	N	---	9.70E-02	NA	---	---	3.47E-02	2.20E-05		**8E-07**
ISOPROPYL ALCOHOL	67-63-0	2.90E+01	Y	---	6.62E+00	2.00E+02	---	**3E-02**	2.36E+00	-		---
M,P-XYLENE	108-38-3	1.20E+00	Y	---	2.74E-01	1.00E+02	---	**3E-03**	9.78E-02	-		---
METHYLENE CHLORIDE	75-09-2	4.80E-01	Y	---	1.10E-01	6.00E+02	---	**2E-04**	3.91E-02	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.10E-01	Y	---	7.08E-02	1.00E+02	---	**7E-04**	2.53E-02	-		---
TETRACHLOROETHENE	127-18-4	2.30E+01	Y	---	5.25E+00	4.00E+01	---	**1E-01**	1.88E+00	2.60E-07		**5E-07**
TRICHLOROETHENE	79-01-6	5.80E+00	Y	---	1.32E+00	2.00E+00	---	**7E-01**	4.73E-01	4.10E-06	M	**2E-06**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	3.95E-03	N	---	9.02E-04	8.00E+01	---	**1E-05**	3.22E-04	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0197H**	**Total Inhalation**	---	**1E+00**	**9E-06**
		Based on NDs only	**0E+00**	**1E-01**	**4E-06**
		Based on Detects only	**#VALUE!**	**8E-01**	**5E-06**
		Site-related only	**0E+00**	**8E-01**	**2E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0197H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.80E-01	NA	NA	NA	3.91E-02	1.0E-08		---	---	---	4E-10	**4E-10**
TRICHLOROETHENE	79-01-6	5.80E+00	NA	NA	NA	4.73E-01	1.0E-06	kidney	---	---	---	5E-07	**5E-07**
TRICHLOROETHENE	79-01-6	5.80E+00	NA		4.73E-01		3.1E-06	NHL+liver	---		1E-06		**1E-06**
VINYL CHLORIDE	75-01-4	3.95E-03	NA	NA	NA	3.22E-04	4.4E-06		---	---	---	1E-09	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0225H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	---	1.56E-02	NA	---	---	5.59E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	2.22E+00	N	---	5.06E-01	2.00E+00	---	**3E-01**	1.81E-01	3.00E-05		**5E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	---	8.23E-02	3.00E+01	---	**3E-03**	2.94E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	---	1.86E-02	2.00E-01	---	**9E-02**	6.65E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	---	5.32E-01	2.00E+00	---	**3E-01**	1.90E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	---	1.12E-01	6.00E+01	---	**2E-03**	4.00E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	---	1.76E-02	9.00E+00	---	**2E-03**	6.28E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	3.26E-01	Y	---	7.44E-02	7.00E+00	---	**1E-02**	2.66E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	---	1.59E-02	4.00E+00	---	**4E-03**	5.67E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	---	1.12E-01	6.00E+01	---	**2E-03**	4.00E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	9.80E-01	Y	---	2.24E-01	8.00E+02	---	**3E-04**	7.99E-02	1.10E-05		**9E-07**
BENZENE	71-43-2	5.21E-01	Y	---	1.19E-01	3.00E+01	---	**4E-03**	4.25E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	---	1.19E-01	1.00E+00	---	**1E-01**	4.24E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	---	1.53E-01	NA	---	---	5.46E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	---	8.86E-02	5.00E+00	---	**2E-02**	3.16E-02	-		---
CARBON TETRACHLORIDE	56-23-5	6.87E-01	Y	---	1.57E-01	1.00E+02	---	**2E-03**	5.60E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	3.59E-01	Y	---	8.20E-02	9.77E+01	---	**8E-04**	2.93E-02	2.30E-05		**7E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	6.29E-01	Y	---	1.44E-01	1.00E+03	---	**1E-04**	5.13E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	---	7.68E-01	NA	---	---	2.74E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	1.24E+01	Y	---	2.83E+00	2.00E+02	---	**1E-02**	1.01E+00	-		---
M,P-XYLENE	108-38-3	2.17E+00	Y	---	4.95E-01	1.00E+02	---	**5E-03**	1.77E-01	-		---
METHYLENE CHLORIDE	75-09-2	7.43E-01	Y	---	1.70E-01	6.00E+02	---	**3E-04**	6.06E-02	1.00E-08	M	**6E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	---	3.77E-01	3.00E+00	---	**1E-01**	1.35E-01	3.40E-05		**5E-06**
O-XYLENE	95-47-6	7.24E-01	Y	---	1.65E-01	1.00E+02	---	**2E-03**	5.90E-02	-		---
TETRACHLOROETHENE	127-18-4	2.57E-01	Y	---	5.87E-02	4.00E+01	---	**1E-03**	2.10E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	6.54E-02	Y	---	1.49E-02	2.00E+00	---	**7E-03**	5.33E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	---	8.04E-03	2.00E+02	---	**4E-05**	2.87E-03	-		---
VINYL CHLORIDE	75-01-4	2.56E-02	N	---	5.83E-03	8.00E+01	---	**7E-05**	2.08E-03	4.40E-06	M	**9E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0225H**	**Total Inhalation**	---	**9E-01**	**3E-05**
		Based on NDs only	**0E+00**	**9E-01**	**2E-05**
		Based on Detects only	**#VALUE!**	**5E-02**	**3E-06**
		Site-related only	**0E+00**	**1E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0225H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.43E-01	NA	NA	NA	6.06E-02	1.0E-08		---	---	---	6E-10	**6E-10**
TRICHLOROETHENE	79-01-6	6.54E-02	NA	NA	NA	5.33E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	6.54E-02	NA		5.33E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	NA	NA	NA	2.08E-03	4.4E-06		---	---	---	9E-09	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0230H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	---	2.40E-03	NA	---	---	8.56E-04	5.80E-05		**5E-08**
1,3-BUTADIENE	106-99-0	4.95E-02	N	---	1.13E-02	2.00E+00	---	**6E-03**	4.04E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	7.00E-02	N	---	1.60E-02	3.00E+01	---	**5E-04**	5.71E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	---	1.60E-03	2.00E-01	---	**8E-03**	5.71E-04	1.60E-05		**9E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.85E-01	N	---	1.11E-01	2.00E+00	---	**6E-02**	3.95E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.90E-01	Y	---	4.34E-02	6.00E+01	---	**7E-04**	1.55E-02	-		---
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	---	7.53E-03	9.00E+00	---	**8E-04**	2.69E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	---	3.20E-02	7.00E+00	---	**5E-03**	1.14E-02	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	---	2.05E-02	4.00E+00	---	**5E-03**	7.34E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	---	1.37E-02	6.00E+01	---	**2E-04**	4.89E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	---	1.14E-02	8.00E+02	---	**1E-05**	4.08E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	5.30E-01	Y	---	1.21E-01	3.00E+01	---	**4E-03**	4.32E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	---	1.94E-02	1.00E+00	---	**2E-02**	6.93E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	---	2.85E-02	NA	---	---	1.02E-02	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	6.50E-01	N	---	1.48E-01	5.00E+00	---	**3E-02**	5.30E-02	-		---
CARBON TETRACHLORIDE	56-23-5	3.90E-01	Y	---	8.90E-02	1.00E+02	---	**9E-04**	3.18E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	9.60E-01	Y	---	2.19E-01	9.77E+01	---	**2E-03**	7.83E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.50E-01	Y	---	3.42E-02	1.00E+03	---	**3E-05**	1.22E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	---	1.48E-01	NA	---	---	5.30E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	5.50E+01	Y	---	1.26E+01	2.00E+02	---	**6E-02**	4.48E+00	-		---
M,P-XYLENE	108-38-3	5.20E-01	Y	---	1.19E-01	1.00E+02	---	**1E-03**	4.24E-02	-		---
METHYLENE CHLORIDE	75-09-2	2.75E-01	N	---	6.28E-02	6.00E+02	---	**1E-04**	2.24E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.00E-01	Y	---	4.57E-02	1.00E+02	---	**5E-04**	1.63E-02	-		---
TETRACHLOROETHENE	127-18-4	4.80E-02	Y	---	1.10E-02	4.00E+01	---	**3E-04**	3.91E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	1.65E-02	N	---	3.77E-03	2.00E+00	---	**2E-03**	1.35E-03	4.10E-06	M	**6E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.00E-03	N	---	1.83E-03	8.00E+01	---	**2E-05**	6.52E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0230H**	**Total Inhalation**	---	**2E-01**	**6E-06**
		Based on NDs only	**0E+00**	**1E-01**	**4E-06**
		Based on Detects only	**#VALUE!**	**8E-02**	**3E-06**
		Site-related only	**0E+00**	**3E-03**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0230H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.75E-01	NA	NA	NA	2.24E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	1.65E-02	NA	NA	NA	1.35E-03	1.0E-06	kidney	---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	1.65E-02	NA		1.35E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	8.00E-03	NA	NA	NA	6.52E-04	4.4E-06		---	---	---	3E-09	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0255H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	---	1.56E-02	NA	---	---	5.59E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	2.22E+00	N	---	5.06E-01	2.00E+00	---	**3E-01**	1.81E-01	3.00E-05		**5E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	---	8.23E-02	3.00E+01	---	**3E-03**	2.94E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	---	1.86E-02	2.00E-01	---	**9E-02**	6.65E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	---	5.32E-01	2.00E+00	---	**3E-01**	1.90E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	---	1.12E-01	6.00E+01	---	**2E-03**	4.00E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	---	1.76E-02	9.00E+00	---	**2E-03**	6.28E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	1.41E-01	Y	---	3.22E-02	7.00E+00	---	**5E-03**	1.15E-02	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	---	1.59E-02	4.00E+00	---	**4E-03**	5.67E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	---	1.12E-01	6.00E+01	---	**2E-03**	4.00E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	5.77E-02	Y	---	1.32E-02	8.00E+02	---	**2E-05**	4.70E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	6.71E-01	Y	---	1.53E-01	3.00E+01	---	**5E-03**	5.47E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	---	1.19E-01	1.00E+00	---	**1E-01**	4.24E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	---	1.53E-01	NA	---	---	5.46E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	---	8.86E-02	5.00E+00	---	**2E-02**	3.16E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.87E-01	Y	---	1.11E-01	1.00E+02	---	**1E-03**	3.97E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.47E+00	Y	---	3.36E-01	9.77E+01	---	**3E-03**	1.20E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.02E-01	Y	---	4.61E-02	1.00E+03	---	**5E-05**	1.65E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	---	7.68E-01	NA	---	---	2.74E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	2.15E+00	Y	---	4.91E-01	2.00E+02	---	**2E-03**	1.75E-01	-		---
M,P-XYLENE	108-38-3	8.65E-01	N	---	1.97E-01	1.00E+02	---	**2E-03**	7.05E-02	-		---
METHYLENE CHLORIDE	75-09-2	8.82E-01	Y	---	2.01E-01	6.00E+02	---	**3E-04**	7.19E-02	1.00E-08	M	**7E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	---	3.77E-01	3.00E+00	---	**1E-01**	1.35E-01	3.40E-05		**5E-06**
O-XYLENE	95-47-6	4.34E-01	N	---	9.90E-02	1.00E+02	---	**1E-03**	3.53E-02	-		---
TETRACHLOROETHENE	127-18-4	2.69E+00	Y	---	6.14E-01	4.00E+01	---	**2E-02**	2.19E-01	2.60E-07		**6E-08**
TRICHLOROETHENE	79-01-6	1.91E-01	Y	---	4.36E-02	2.00E+00	---	**2E-02**	1.56E-02	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	---	8.04E-03	2.00E+02	---	**4E-05**	2.87E-03	-		---
VINYL CHLORIDE	75-01-4	2.56E-02	N	---	5.83E-03	8.00E+01	---	**7E-05**	2.08E-03	4.40E-06	M	**9E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0255H**	**Total Inhalation**	---	**9E-01**	**3E-05**
		Based on NDs only	**0E+00**	**9E-01**	**2E-05**
		Based on Detects only	**#VALUE!**	**5E-02**	**4E-06**
		Site-related only	**0E+00**	**4E-02**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0255H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.82E-01	NA	NA	NA	7.19E-02	1.0E-08		---	---	---	7E-10	**7E-10**
TRICHLOROETHENE	79-01-6	1.91E-01	NA	NA	NA	1.56E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	1.91E-01	NA		1.56E-02		3.1E-06	NHL+liver	---		5E-08		**5E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	NA	NA	NA	2.08E-03	4.4E-06		---	---	---	9E-09	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0256H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	---	1.56E-02	NA	---	---	5.59E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	2.22E+00	N	---	5.06E-01	2.00E+00	---	**3E-01**	1.81E-01	3.00E-05		**5E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	---	8.23E-02	3.00E+01	---	**3E-03**	2.94E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	---	1.86E-02	2.00E-01	---	**9E-02**	6.65E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	---	5.32E-01	2.00E+00	---	**3E-01**	1.90E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	---	1.12E-01	6.00E+01	---	**2E-03**	4.00E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	---	1.76E-02	9.00E+00	---	**2E-03**	6.28E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	1.04E-01	Y	---	2.37E-02	7.00E+00	---	**3E-03**	8.48E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	---	1.59E-02	4.00E+00	---	**4E-03**	5.67E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	---	1.12E-01	6.00E+01	---	**2E-03**	4.00E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	6.91E-02	Y	---	1.58E-02	8.00E+02	---	**2E-05**	5.63E-03	1.10E-05		**6E-08**
BENZENE	71-43-2	5.72E-01	Y	---	1.31E-01	3.00E+01	---	**4E-03**	4.66E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	---	1.19E-01	1.00E+00	---	**1E-01**	4.24E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	---	1.53E-01	NA	---	---	5.46E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	---	8.86E-02	5.00E+00	---	**2E-02**	3.16E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.86E-01	Y	---	1.11E-01	1.00E+02	---	**1E-03**	3.96E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.49E-01	Y	---	7.97E-02	9.77E+01	---	**8E-04**	2.85E-02	2.30E-05		**7E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.68E-01	Y	---	3.84E-02	1.00E+03	---	**4E-05**	1.37E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	---	7.68E-01	NA	---	---	2.74E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	2.07E+00	Y	---	4.73E-01	2.00E+02	---	**2E-03**	1.69E-01	-		---
M,P-XYLENE	108-38-3	6.85E-01	Y	---	1.56E-01	1.00E+02	---	**2E-03**	5.59E-02	-		---
METHYLENE CHLORIDE	75-09-2	6.77E-01	Y	---	1.55E-01	6.00E+02	---	**3E-04**	5.52E-02	1.00E-08	M	**6E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	---	3.77E-01	3.00E+00	---	**1E-01**	1.35E-01	3.40E-05		**5E-06**
O-XYLENE	95-47-6	4.34E-01	N	---	9.90E-02	1.00E+02	---	**1E-03**	3.53E-02	-		---
TETRACHLOROETHENE	127-18-4	1.84E-01	Y	---	4.20E-02	4.00E+01	---	**1E-03**	1.50E-02	2.60E-07		**4E-09**
TRICHLOROETHENE	79-01-6	6.16E-02	Y	---	1.41E-02	2.00E+00	---	**7E-03**	5.02E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	---	8.04E-03	2.00E+02	---	**4E-05**	2.87E-03	-		---
VINYL CHLORIDE	75-01-4	2.56E-02	N	---	5.83E-03	8.00E+01	---	**7E-05**	2.08E-03	4.40E-06	M	**9E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0256H**	**Total Inhalation**	---	**9E-01**	**3E-05**
		Based on NDs only	**0E+00**	**9E-01**	**2E-05**
		Based on Detects only	**#VALUE!**	**2E-02**	**2E-06**
		Site-related only	**0E+00**	**1E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0256H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME	RME
	child	adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.77E-01	NA	NA	NA	5.52E-02	1.0E-08		---	---	---	6E-10	**6E-10**
TRICHLOROETHENE	79-01-6	6.16E-02	NA	NA	NA	5.02E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	6.16E-02	NA		5.02E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	NA	NA	NA	2.08E-03	4.4E-06		---	---	---	9E-09	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0263H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	---	1.56E-02	NA	---	---	5.59E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	2.22E+01	N	---	5.06E+00	2.00E+00	---	**3E+00**	1.81E+00	3.00E-05		**5E-05**
1,4-DIOXANE	123-91-1	3.61E-01	N	---	8.23E-02	3.00E+01	---	**3E-03**	2.94E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	---	1.86E-02	2.00E-01	---	**9E-02**	6.65E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	---	5.32E-01	2.00E+00	---	**3E-01**	1.90E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.53E-01	Y	---	1.49E-01	6.00E+01	---	**2E-03**	5.32E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	---	1.76E-02	9.00E+00	---	**2E-03**	6.28E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	2.88E-01	Y	---	6.58E-02	7.00E+00	---	**9E-03**	2.35E-02	2.60E-05		**6E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	---	1.59E-02	4.00E+00	---	**4E-03**	5.67E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	---	1.12E-01	6.00E+01	---	**2E-03**	4.00E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.13E-02	Y	---	1.40E-02	8.00E+02	---	**2E-05**	5.00E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	1.24E+00	Y	---	2.83E-01	3.00E+01	---	**9E-03**	1.01E-01	7.80E-06		**8E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	---	1.19E-01	1.00E+00	---	**1E-01**	4.24E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	---	1.53E-01	NA	---	---	5.46E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	3.88E+00	N	---	8.86E-01	5.00E+00	---	**2E-01**	3.16E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.94E-01	Y	---	1.36E-01	1.00E+02	---	**1E-03**	4.84E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	4.87E-02	N	---	1.11E-02	9.77E+01	---	**1E-04**	3.97E-03	2.30E-05		**9E-08**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	6.63E-01	Y	---	1.51E-01	1.00E+03	---	**2E-04**	5.41E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	---	7.68E-01	NA	---	---	2.74E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	1.54E+01	N	---	3.50E+00	2.00E+02	---	**2E-02**	1.25E+00	-		**---**
M,P-XYLENE	108-38-3	1.63E+00	Y	---	3.72E-01	1.00E+02	---	**4E-03**	1.33E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.47E+00	N	---	7.92E-01	6.00E+02	---	**1E-03**	2.83E-01	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	---	3.77E-01	3.00E+00	---	**1E-01**	1.35E-01	3.40E-05		**5E-06**
O-XYLENE	95-47-6	6.16E-01	Y	---	1.41E-01	1.00E+02	---	**1E-03**	5.02E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.26E+01	Y	---	2.88E+00	4.00E+01	---	**7E-02**	1.03E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	5.79E-01	Y	---	1.32E-01	2.00E+00	---	**7E-02**	4.72E-02	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	3.52E-02	N	---	8.04E-03	2.00E+02	---	**4E-05**	2.87E-03	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	---	5.83E-03	8.00E+01	---	**7E-05**	2.08E-03	4.40E-06	M	**9E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0263H**	**Total Inhalation**	**---**	**4E+00**	**8E-05**
		Based on NDs only	**0E+00**	**3E+00**	**7E-05**
		Based on Detects only	**#VALUE!**	**2E-01**	**2E-06**
		Site-related only	**0E+00**	**1E-01**	**6E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0263H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.47E+00	NA	NA	NA	2.83E-01	1.0E-08		---	---	---	3E-09	**3E-09**
TRICHLOROETHENE	79-01-6	5.79E-01	NA	NA	NA	4.72E-02	1.0E-06	kidney	---	---	---	5E-08	**5E-08**
TRICHLOROETHENE	79-01-6	5.79E-01	NA		4.72E-02		3.1E-06	NHL+liver	---		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	2.56E-02	NA	NA	NA	2.08E-03	4.4E-06		---	---	---	9E-09	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0273H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.15E-02	N	---	2.63E-03	NA	---	---	9.38E-04	5.80E-05		**5E-08**
1,3-BUTADIENE	106-99-0	5.50E-02	N	---	1.26E-02	2.00E+00	---	**6E-03**	4.48E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	7.50E-02	N	---	1.71E-02	3.00E+01	---	**6E-04**	6.12E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	---	1.71E-03	2.00E-01	---	**9E-03**	6.12E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	---	1.14E-01	2.00E+00	---	**6E-02**	4.08E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.90E-01	Y	---	1.35E-01	6.00E+01	---	**2E-03**	4.81E-02	-		---
1,2-DIBROMOETHANE	106-93-4	3.55E-02	N	---	8.11E-03	9.00E+00	---	**9E-04**	2.89E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	1.60E-01	Y	---	3.65E-02	7.00E+00	---	**5E-03**	1.30E-02	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	---	2.28E-02	4.00E+00	---	**6E-03**	8.15E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	2.10E-01	Y	---	4.79E-02	6.00E+01	---	**8E-04**	1.71E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	---	1.26E-02	8.00E+02	---	**2E-05**	4.48E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	4.50E-01	Y	---	1.03E-01	3.00E+01	---	**3E-03**	3.67E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	---	2.05E-02	1.00E+00	---	**2E-02**	7.34E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.35E-01	N	---	3.08E-02	NA	---	---	1.10E-02	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	---	1.60E-01	5.00E+00	---	**3E-02**	5.71E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	---	9.13E-02	1.00E+02	---	**9E-04**	3.26E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	5.30E-01	Y	---	1.21E-01	9.77E+01	---	**1E-03**	4.32E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.50E-01	Y	---	3.42E-02	1.00E+03	---	**3E-05**	1.22E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	---	1.60E-01	NA	---	---	5.71E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	2.30E+01	Y	---	5.25E+00	2.00E+02	---	**3E-02**	1.88E+00	-		---
M,P-XYLENE	108-38-3	5.10E-01	Y	---	1.16E-01	1.00E+02	---	**1E-03**	4.16E-02	-		---
METHYLENE CHLORIDE	75-09-2	2.30E-01	N	---	5.25E-02	6.00E+02	---	**9E-05**	1.88E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.70E-01	Y	---	3.88E-02	1.00E+02	---	**4E-04**	1.39E-02	-		---
TETRACHLOROETHENE	127-18-4	2.70E+00	Y	---	6.16E-01	4.00E+01	---	**2E-02**	2.20E-01	2.60E-07		**6E-08**
TRICHLOROETHENE	79-01-6	1.75E-02	N	---	4.00E-03	2.00E+00	---	**2E-03**	1.43E-03	4.10E-06	M	**6E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.50E-03	N	---	1.94E-03	8.00E+01	---	**2E-05**	6.93E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0273H**	**Total Inhalation**	---	**2E-01**	**6E-06**
		Based on NDs only	**0E+00**	**1E-01**	**4E-06**
		Based on Detects only	**#VALUE!**	**6E-02**	**2E-06**
		Site-related only	**0E+00**	**2E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0273H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.30E-01	NA	NA	NA	1.88E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	1.75E-02	NA	NA	NA	1.43E-03	1.0E-06	kidney	---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	1.75E-02	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	8.50E-03	NA	NA	NA	6.93E-04	4.4E-06		---	---	---	3E-09	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0274H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-02	N	---	5.48E-03	NA	---	---	1.96E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	4.90E-02	N	---	1.12E-02	2.00E+00	---	**6E-03**	4.00E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	8.00E-02	N	---	1.83E-02	3.00E+01	---	**6E-04**	6.52E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	---	2.74E-03	2.00E-01	---	**1E-02**	9.78E-04	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.95E-01	N	---	1.13E-01	2.00E+00	---	**6E-02**	4.04E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E-01	Y	---	3.65E-02	6.00E+01	---	**6E-04**	1.30E-02	-		---
1,2-DIBROMOETHANE	106-93-4	4.30E-02	N	---	9.82E-03	9.00E+00	---	**1E-03**	3.51E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	---	3.20E-02	7.00E+00	---	**5E-03**	1.14E-02	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	2.17E-02	4.00E+00	---	**5E-03**	7.75E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	8.00E-02	N	---	1.83E-02	6.00E+01	---	**3E-04**	6.52E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.55E-02	N	---	1.04E-02	8.00E+02	---	**1E-05**	3.71E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	3.60E-01	Y	---	8.22E-02	3.00E+01	---	**3E-03**	2.94E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	---	2.40E-02	1.00E+00	---	**2E-02**	8.56E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	---	2.51E-02	NA	---	---	8.97E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	6.00E-01	N	---	1.37E-01	5.00E+00	---	**3E-02**	4.89E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	---	9.36E-02	1.00E+02	---	**9E-04**	3.34E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	5.10E-01	Y	---	1.16E-01	9.77E+01	---	**1E-03**	4.16E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.60E+00	Y	---	3.65E-01	1.00E+03	---	**4E-04**	1.30E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.10E-01	N	---	9.36E-02	NA	---	---	3.34E-02	2.20E-05		**7E-07**
ISOPROPYL ALCOHOL	67-63-0	4.40E+01	Y	---	1.00E+01	2.00E+02	---	**5E-02**	3.59E+00	-		---
M,P-XYLENE	108-38-3	6.20E+00	Y	---	1.42E+00	1.00E+02	---	**1E-02**	5.06E-01	-		---
METHYLENE CHLORIDE	75-09-2	6.20E-01	Y	---	1.42E-01	6.00E+02	---	**2E-04**	5.06E-02	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.40E+00	Y	---	3.20E-01	1.00E+02	---	**3E-03**	1.14E-01	-		---
TETRACHLOROETHENE	127-18-4	1.20E+01	Y	---	2.74E+00	4.00E+01	---	**7E-02**	9.78E-01	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	3.50E-02	Y	---	7.99E-03	2.00E+00	---	**4E-03**	2.85E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	3.80E-03	N	---	8.68E-04	8.00E+01	---	**1E-05**	3.10E-04	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0274H**	**Total Inhalation**	---	**3E-01**	**6E-06**
		Based on NDs only	**0E+00**	**1E-01**	**4E-06**
		Based on Detects only	**#VALUE!**	**2E-01**	**2E-06**
		Site-related only	**0E+00**	**7E-02**	**3E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0274H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.20E-01	NA	NA	NA	5.06E-02	1.0E-08		---	---	---	5E-10	**5E-10**
TRICHLOROETHENE	79-01-6	3.50E-02	NA	NA	NA	2.85E-03	1.0E-06	kidney	---	---	---	3E-09	**3E-09**
TRICHLOROETHENE	79-01-6	3.50E-02	NA		2.85E-03		3.1E-06	NHL+liver	---		9E-09		**9E-09**
VINYL CHLORIDE	75-01-4	3.80E-03	NA	NA	NA	3.10E-04	4.4E-06		---	---	---	1E-09	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0277H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.15E-02	N	---	2.63E-03	NA	---	---	9.38E-04	5.80E-05		**5E-08**
1,3-BUTADIENE	106-99-0	5.00E-02	N	---	1.14E-02	2.00E+00	---	**6E-03**	4.08E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	7.50E-02	N	---	1.71E-02	3.00E+01	---	**6E-04**	6.12E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	---	1.71E-03	2.00E-01	---	**9E-03**	6.12E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	---	1.14E-01	2.00E+00	---	**6E-02**	4.08E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E-01	Y	---	2.74E-02	6.00E+01	---	**5E-04**	9.78E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.50E-02	N	---	7.99E-03	9.00E+00	---	**9E-04**	2.85E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	2.60E-01	Y	---	5.94E-02	7.00E+00	---	**8E-03**	2.12E-02	2.60E-05		**6E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	---	2.28E-02	4.00E+00	---	**6E-03**	8.15E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	6.50E-02	N	---	1.48E-02	6.00E+01	---	**2E-04**	5.30E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	---	1.26E-02	8.00E+02	---	**2E-05**	4.48E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	4.00E-01	Y	---	9.13E-02	3.00E+01	---	**3E-03**	3.26E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	---	2.05E-02	1.00E+00	---	**2E-02**	7.34E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.35E-01	N	---	3.08E-02	NA	---	---	1.10E-02	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	---	1.60E-01	5.00E+00	---	**3E-02**	5.71E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	---	9.13E-02	1.00E+02	---	**9E-04**	3.26E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	4.90E-01	Y	---	1.12E-01	9.77E+01	---	**1E-03**	4.00E-02	2.30E-05		**9E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.40E-01	Y	---	5.48E-02	1.00E+03	---	**5E-05**	1.96E-02	2.50E-06		**5E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	---	1.60E-01	NA	---	---	5.71E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	8.00E+00	Y	---	1.83E+00	2.00E+02	---	**9E-03**	6.52E-01	-		---
M,P-XYLENE	108-38-3	9.00E-01	Y	---	2.05E-01	1.00E+02	---	**2E-03**	7.34E-02	-		---
METHYLENE CHLORIDE	75-09-2	3.40E+00	Y	---	7.76E-01	6.00E+02	---	**1E-03**	2.77E-01	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.60E-01	Y	---	5.94E-02	1.00E+02	---	**6E-04**	2.12E-02	-		---
TETRACHLOROETHENE	127-18-4	5.00E+00	Y	---	1.14E+00	4.00E+01	---	**3E-02**	4.08E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	1.75E-02	N	---	4.00E-03	2.00E+00	---	**2E-03**	1.43E-03	4.10E-06	M	**6E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.50E-03	N	---	1.94E-03	8.00E+01	---	**2E-05**	6.93E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0277H**	**Total Inhalation**	---	**2E-01**	**6E-06**
		Based on NDs only	**0E+00**	**1E-01**	**4E-06**
		Based on Detects only	**#VALUE!**	**6E-02**	**2E-06**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0277H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.40E+00	NA	NA	NA	2.77E-01	1.0E-08		---	---	---	3E-09	**3E-09**
TRICHLOROETHENE	79-01-6	1.75E-02	NA	NA	NA	1.43E-03	1.0E-06	kidney	---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	1.75E-02	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	8.50E-03	NA	NA	NA	6.93E-04	4.4E-06		---	---	---	3E-09	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0302H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00E-02	N	---	2.28E-03	NA	---	---	8.15E-04	5.80E-05		**5E-08**
1,3-BUTADIENE	106-99-0	4.65E-02	N	---	1.06E-02	2.00E+00	---	**5E-03**	3.79E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	7.00E-02	N	---	1.60E-02	3.00E+01	---	**5E-04**	5.71E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	6.50E-03	N	---	1.48E-03	2.00E-01	---	**7E-03**	5.30E-04	1.60E-05		**8E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	4.55E-01	N	---	1.04E-01	2.00E+00	---	**5E-02**	3.71E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E-01	Y	---	3.65E-02	6.00E+01	---	**6E-04**	1.30E-02	-		---
1,2-DIBROMOETHANE	106-93-4	3.10E-02	N	---	7.08E-03	9.00E+00	---	**8E-04**	2.53E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	9.80E-02	Y	---	2.24E-02	7.00E+00	---	**3E-03**	7.99E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	8.50E-02	N	---	1.94E-02	4.00E+00	---	**5E-03**	6.93E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	5.50E-02	N	---	1.26E-02	6.00E+01	---	**2E-04**	4.48E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.90E-02	N	---	1.12E-02	8.00E+02	---	**1E-05**	4.00E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	4.80E-01	Y	---	1.10E-01	3.00E+01	---	**4E-03**	3.91E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	8.00E-02	N	---	1.83E-02	1.00E+00	---	**2E-02**	6.52E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	1.20E-01	N	---	2.74E-02	NA	---	---	9.78E-03	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	6.00E-01	N	---	1.37E-01	5.00E+00	---	**3E-02**	4.89E-02	-		---
CARBON TETRACHLORIDE	56-23-5	3.90E-01	Y	---	8.90E-02	1.00E+02	---	**9E-04**	3.18E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.70E-01	Y	---	8.45E-02	9.77E+01	---	**9E-04**	3.02E-02	2.30E-05		**7E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.30E-01	Y	---	2.97E-02	1.00E+03	---	**3E-05**	1.06E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.00E-01	N	---	1.37E-01	NA	---	---	4.89E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.50E+01	Y	---	3.42E+00	2.00E+02	---	**2E-02**	1.22E+00	-		---
M,P-XYLENE	108-38-3	5.40E-01	Y	---	1.23E-01	1.00E+02	---	**1E-03**	4.40E-02	-		---
METHYLENE CHLORIDE	75-09-2	2.50E-01	N	---	5.71E-02	6.00E+02	---	**1E-04**	2.04E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.70E-01	Y	---	6.16E-02	1.00E+02	---	**6E-04**	2.20E-02	-		---
TETRACHLOROETHENE	127-18-4	3.40E-01	Y	---	7.76E-02	4.00E+01	---	**2E-03**	2.77E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	1.55E-02	N	---	3.54E-03	2.00E+00	---	**2E-03**	1.26E-03	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	7.50E-03	N	---	1.71E-03	8.00E+01	---	**2E-05**	6.12E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0302H**	**Total Inhalation**	---	**1E-01**	**5E-06**
		Based on NDs only	**0E+00**	**1E-01**	**4E-06**
		Based on Detects only	**#VALUE!**	**3E-02**	**1E-06**
		Site-related only	**0E+00**	**4E-03**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0302H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.50E-01	NA	NA	NA	2.04E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	1.55E-02	NA	NA	NA	1.26E-03	1.0E-06	kidney	---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	1.55E-02	NA		1.26E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	7.50E-03	NA	NA	NA	6.12E-04	4.4E-06		---	---	---	3E-09	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0315H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	---	2.51E-03	NA	---	---	8.97E-04	5.80E-05		**5E-08**
1,3-BUTADIENE	106-99-0	5.00E-02	N	---	1.14E-02	2.00E+00	---	**6E-03**	4.08E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	7.50E-02	N	---	1.71E-02	3.00E+01	---	**6E-04**	6.12E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	---	1.60E-03	2.00E-01	---	**8E-03**	5.71E-04	1.60E-05		**9E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	---	1.14E-01	2.00E+00	---	**6E-02**	4.08E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.50E-02	N	---	1.26E-02	6.00E+01	---	**2E-04**	4.48E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.45E-02	N	---	7.88E-03	9.00E+00	---	**9E-04**	2.81E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	1.30E-01	Y	---	2.97E-02	7.00E+00	---	**4E-03**	1.06E-02	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	2.17E-02	4.00E+00	---	**5E-03**	7.75E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	---	1.37E-02	6.00E+01	---	**2E-04**	4.89E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	---	1.26E-02	8.00E+02	---	**2E-05**	4.48E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	4.30E-01	Y	---	9.82E-02	3.00E+01	---	**3E-03**	3.51E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	---	2.05E-02	1.00E+00	---	**2E-02**	7.34E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	---	2.97E-02	NA	---	---	1.06E-02	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	---	1.60E-01	5.00E+00	---	**3E-02**	5.71E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	---	9.13E-02	1.00E+02	---	**9E-04**	3.26E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.90E-01	Y	---	8.90E-02	9.77E+01	---	**9E-04**	3.18E-02	2.30E-05		**7E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.40E-01	Y	---	3.20E-02	1.00E+03	---	**3E-05**	1.14E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	---	1.60E-01	NA	---	---	5.71E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.70E+01	Y	---	3.88E+00	2.00E+02	---	**2E-02**	1.39E+00	-		---
M,P-XYLENE	108-38-3	4.40E-01	Y	---	1.00E-01	1.00E+02	---	**1E-03**	3.59E-02	-		---
METHYLENE CHLORIDE	75-09-2	2.60E-01	N	---	5.94E-02	6.00E+02	---	**1E-04**	2.12E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.40E-01	Y	---	3.20E-02	1.00E+02	---	**3E-04**	1.14E-02	-		---
TETRACHLOROETHENE	127-18-4	2.30E+00	Y	---	5.25E-01	4.00E+01	---	**1E-02**	1.88E-01	2.60E-07		**5E-08**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	---	6.62E-02	2.00E+00	---	**3E-02**	2.36E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.50E-03	N	---	1.94E-03	8.00E+01	---	**2E-05**	6.93E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0315H**	**Total Inhalation**	---	**2E-01**	**6E-06**
		Based on NDs only	**0E+00**	**1E-01**	**4E-06**
		Based on Detects only	**#VALUE!**	**8E-02**	**2E-06**
		Site-related only	**0E+00**	**5E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0315H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.60E-01	NA	NA	NA	2.12E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	2.90E-01	NA	NA	NA	2.36E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.90E-01	NA		2.36E-02		3.1E-06	NHL+liver	---		7E-08		**7E-08**
VINYL CHLORIDE	75-01-4	8.50E-03	NA	NA	NA	6.93E-04	4.4E-06		---	---	---	3E-09	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0329H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-02	N	---	5.48E-03	NA	---	---	1.96E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	4.90E-02	N	---	1.12E-02	2.00E+00	---	**6E-03**	4.00E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	8.00E-02	N	---	1.83E-02	3.00E+01	---	**6E-04**	6.52E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	---	2.74E-03	2.00E-01	---	**1E-02**	9.78E-04	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.95E-01	N	---	1.13E-01	2.00E+00	---	**6E-02**	4.04E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.40E-01	Y	---	7.76E-02	6.00E+01	---	**1E-03**	2.77E-02	-		---
1,2-DIBROMOETHANE	106-93-4	4.30E-02	N	---	9.82E-03	9.00E+00	---	**1E-03**	3.51E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	7.20E-02	Y	---	1.64E-02	7.00E+00	---	**2E-03**	5.87E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	2.17E-02	4.00E+00	---	**5E-03**	7.75E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	8.00E-02	N	---	1.83E-02	6.00E+01	---	**3E-04**	6.52E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.55E-02	N	---	1.04E-02	8.00E+02	---	**1E-05**	3.71E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	3.80E-01	Y	---	8.68E-02	3.00E+01	---	**3E-03**	3.10E-02	7.80E-06		**2E-07**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	---	2.40E-02	1.00E+00	---	**2E-02**	8.56E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	---	2.51E-02	NA	---	---	8.97E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	6.00E-01	N	---	1.37E-01	5.00E+00	---	**3E-02**	4.89E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	---	9.59E-02	1.00E+02	---	**1E-03**	3.42E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	7.60E-02	Y	---	1.74E-02	9.77E+01	---	**2E-04**	6.20E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.60E-01	Y	---	5.94E-02	1.00E+03	---	**6E-05**	2.12E-02	2.50E-06		**5E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.10E-01	N	---	9.36E-02	NA	---	---	3.34E-02	2.20E-05		**7E-07**
ISOPROPYL ALCOHOL	67-63-0	1.10E+01	Y	---	2.51E+00	2.00E+02	---	**1E-02**	8.97E-01	-		---
M,P-XYLENE	108-38-3	1.10E+00	Y	---	2.51E-01	1.00E+02	---	**3E-03**	8.97E-02	-		---
METHYLENE CHLORIDE	75-09-2	4.90E-01	Y	---	1.12E-01	6.00E+02	---	**2E-04**	4.00E-02	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	4.10E-01	Y	---	9.36E-02	1.00E+02	---	**9E-04**	3.34E-02	-		---
TETRACHLOROETHENE	127-18-4	9.20E-02	Y	---	2.10E-02	4.00E+01	---	**5E-04**	7.50E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	8.00E-03	N	---	1.83E-03	2.00E+00	---	**9E-04**	6.52E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	3.80E-03	N	---	8.68E-04	8.00E+01	---	**1E-05**	3.10E-04	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0329H**	**Total Inhalation**	---	**2E-01**	**5E-06**
		Based on NDs only	**0E+00**	**1E-01**	**4E-06**
		Based on Detects only	**#VALUE!**	**2E-02**	**8E-07**
		Site-related only	**0E+00**	**2E-03**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0329H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.90E-01	NA	NA	NA	4.00E-02	1.0E-08		---	---	---	4E-10	**4E-10**
TRICHLOROETHENE	79-01-6	8.00E-03	NA	NA	NA	6.52E-04	1.0E-06	kidney	---	---	---	7E-10	**7E-10**
TRICHLOROETHENE	79-01-6	8.00E-03	NA		6.52E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	3.80E-03	NA	NA	NA	3.10E-04	4.4E-06		---	---	---	1E-09	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0334H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	---	1.56E-02	NA	---	---	5.59E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	2.22E+00	N	---	5.06E-01	2.00E+00	---	**3E-01**	1.81E-01	3.00E-05		**5E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	---	8.23E-02	3.00E+01	---	**3E-03**	2.94E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	---	1.86E-02	2.00E-01	---	**9E-02**	6.65E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	---	5.32E-01	2.00E+00	---	**3E-01**	1.90E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	---	1.12E-01	6.00E+01	---	**2E-03**	4.00E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	---	1.76E-02	9.00E+00	---	**2E-03**	6.28E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	9.92E-02	Y	---	2.26E-02	7.00E+00	---	**3E-03**	8.09E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	---	1.59E-02	4.00E+00	---	**4E-03**	5.67E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	---	1.12E-01	6.00E+01	---	**2E-03**	4.00E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	8.42E-02	Y	---	1.92E-02	8.00E+02	---	**2E-05**	6.87E-03	1.10E-05		**8E-08**
BENZENE	71-43-2	5.78E-01	Y	---	1.32E-01	3.00E+01	---	**4E-03**	4.71E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	---	1.19E-01	1.00E+00	---	**1E-01**	4.24E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	---	1.53E-01	NA	---	---	5.46E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	---	8.86E-02	5.00E+00	---	**2E-02**	3.16E-02	-		---
CARBON TETRACHLORIDE	56-23-5	5.40E-01	Y	---	1.23E-01	1.00E+02	---	**1E-03**	4.40E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	1.67E+00	Y	---	3.81E-01	9.77E+01	---	**4E-03**	1.36E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.71E-01	Y	---	6.19E-02	1.00E+03	---	**6E-05**	2.21E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	---	7.68E-01	NA	---	---	2.74E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	7.94E+00	Y	---	1.81E+00	2.00E+02	---	**9E-03**	6.47E-01	-		---
M,P-XYLENE	108-38-3	8.45E-01	Y	---	1.93E-01	1.00E+02	---	**2E-03**	6.89E-02	-		---
METHYLENE CHLORIDE	75-09-2	6.49E-01	Y	---	1.48E-01	6.00E+02	---	**2E-04**	5.29E-02	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	---	3.77E-01	3.00E+00	---	**1E-01**	1.35E-01	3.40E-05		**5E-06**
O-XYLENE	95-47-6	4.34E-01	N	---	9.90E-02	1.00E+02	---	**1E-03**	3.53E-02	-		---
TETRACHLOROETHENE	127-18-4	9.64E-02	Y	---	2.20E-02	4.00E+01	---	**6E-04**	7.86E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	5.35E-02	N	---	1.22E-02	2.00E+00	---	**6E-03**	4.36E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	---	8.04E-03	2.00E+02	---	**4E-05**	2.87E-03	-		---
VINYL CHLORIDE	75-01-4	2.56E-02	N	---	5.83E-03	8.00E+01	---	**7E-05**	2.08E-03	4.40E-06	M	**9E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0334H**	**Total Inhalation**	---	**9E-01**	**3E-05**
		Based on NDs only	**0E+00**	**9E-01**	**2E-05**
		Based on Detects only	**#VALUE!**	**2E-02**	**4E-06**
		Site-related only	**0E+00**	**9E-03**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0334H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.49E-01	NA	NA	NA	5.29E-02	1.0E-08		---	---	---	5E-10	**5E-10**
TRICHLOROETHENE	79-01-6	5.35E-02	NA	NA	NA	4.36E-03	1.0E-06	kidney	---	---	---	4E-09	**4E-09**
TRICHLOROETHENE	79-01-6	5.35E-02	NA		4.36E-03		3.1E-06	NHL+liver	---		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	NA	NA	NA	2.08E-03	4.4E-06		---	---	---	9E-09	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0336H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-02	N	---	5.48E-03	NA	---	---	1.96E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	4.90E-02	N	---	1.12E-02	2.00E+00	---	**6E-03**	4.00E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	8.00E-02	N	---	1.83E-02	3.00E+01	---	**6E-04**	6.52E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.15E-02	N	---	2.63E-03	2.00E-01	---	**1E-02**	9.38E-04	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.90E-01	N	---	1.12E-01	2.00E+00	---	**6E-02**	4.00E-02	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	2.20E-01	Y	---	5.02E-02	6.00E+01	---	**8E-04**	1.79E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.25E-02	N	---	9.70E-03	9.00E+00	---	**1E-03**	3.47E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	---	1.76E-02	7.00E+00	---	**3E-03**	6.28E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	2.17E-02	4.00E+00	---	**5E-03**	7.75E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	8.00E-02	N	---	1.83E-02	6.00E+01	---	**3E-04**	6.52E-03	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.50E-02	N	---	1.03E-02	8.00E+02	---	**1E-05**	3.67E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	5.50E-01	Y	---	1.26E-01	3.00E+01	---	**4E-03**	4.48E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	---	2.40E-02	1.00E+00	---	**2E-02**	8.56E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	---	2.51E-02	NA	---	---	8.97E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	5.50E-01	N	---	1.26E-01	5.00E+00	---	**3E-02**	4.48E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	---	9.59E-02	1.00E+02	---	**1E-03**	3.42E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.10E-01	Y	---	7.08E-02	9.77E+01	---	**7E-04**	2.53E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.10E-01	Y	---	4.79E-02	1.00E+03	---	**5E-05**	1.71E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.05E-01	N	---	9.25E-02	NA	---	---	3.30E-02	2.20E-05		**7E-07**
ISOPROPYL ALCOHOL	67-63-0	1.90E+01	Y	---	4.34E+00	2.00E+02	---	**2E-02**	1.55E+00	-		**---**
M,P-XYLENE	108-38-3	6.90E-01	Y	---	1.58E-01	1.00E+02	---	**2E-03**	5.63E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	5.00E-01	Y	---	1.14E-01	6.00E+02	---	**2E-04**	4.08E-02	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.30E-01	Y	---	5.25E-02	1.00E+02	---	**5E-04**	1.88E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.60E+01	Y	---	3.65E+00	4.00E+01	---	**9E-02**	1.30E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	1.80E-02	Y	---	4.11E-03	2.00E+00	---	**2E-03**	1.47E-03	4.10E-06	M	**6E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	3.80E-03	N	---	8.68E-04	8.00E+01	---	**1E-05**	3.10E-04	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0336H**	**Total Inhalation**	**---**	**3E-01**	**6E-06**
		Based on NDs only	**0E+00**	**1E-01**	**4E-06**
		Based on Detects only	**#VALUE!**	**1E-01**	**2E-06**
		Site-related only	**0E+00**	**9E-02**	**4E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0336H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.00E-01	NA	NA	NA	4.08E-02	1.0E-08		---	---	---	4E-10	**4E-10**
TRICHLOROETHENE	79-01-6	1.80E-02	NA	NA	NA	1.47E-03	1.0E-06	kidney	---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	1.80E-02	NA		1.47E-03		3.1E-06	NHL+liver	---		5E-09		**5E-09**
VINYL CHLORIDE	75-01-4	3.80E-03	NA	NA	NA	3.10E-04	4.4E-06		---	---	---	1E-09	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0347H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.55E-02	N	---	5.82E-03	NA	---	---	2.08E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	5.00E-02	N	---	1.14E-02	2.00E+00	---	**6E-03**	4.08E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	8.50E-02	N	---	1.94E-02	3.00E+01	---	**6E-04**	6.93E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.25E-02	N	---	2.85E-03	2.00E-01	---	**1E-02**	1.02E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	---	1.14E-01	2.00E+00	---	**6E-02**	4.08E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.30E-01	Y	---	9.82E-02	6.00E+01	---	**2E-03**	3.51E-02	-		---
1,2-DIBROMOETHANE	106-93-4	4.55E-02	N	---	1.04E-02	9.00E+00	---	**1E-03**	3.71E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	1.20E+00	Y	---	2.74E-01	7.00E+00	---	**4E-02**	9.78E-02	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	---	2.28E-02	4.00E+00	---	**6E-03**	8.15E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	8.50E-02	N	---	1.94E-02	6.00E+01	---	**3E-04**	6.93E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	4.80E-02	N	---	1.10E-02	8.00E+02	---	**1E-05**	3.91E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	4.90E-01	Y	---	1.12E-01	3.00E+01	---	**4E-03**	4.00E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	1.15E-01	N	---	2.63E-02	1.00E+00	---	**3E-02**	9.38E-03	4.90E-05		**5E-07**
BROMODICHLOROMETHANE	75-27-4	1.15E-01	N	---	2.63E-02	NA	---	---	9.38E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	6.00E-01	N	---	1.37E-01	5.00E+00	---	**3E-02**	4.89E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	---	9.59E-02	1.00E+02	---	**1E-03**	3.42E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.00E+00	Y	---	2.28E-01	9.77E+01	---	**2E-03**	8.15E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	6.30E-01	Y	---	1.44E-01	1.00E+03	---	**1E-04**	5.14E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.35E-01	N	---	9.93E-02	NA	---	---	3.55E-02	2.20E-05		**8E-07**
ISOPROPYL ALCOHOL	67-63-0	1.50E+01	Y	---	3.42E+00	2.00E+02	---	**2E-02**	1.22E+00	-		---
M,P-XYLENE	108-38-3	2.00E+00	Y	---	4.57E-01	1.00E+02	---	**5E-03**	1.63E-01	-		---
METHYLENE CHLORIDE	75-09-2	5.00E-01	Y	---	1.14E-01	6.00E+02	---	**2E-04**	4.08E-02	1.00E-08	M	**4E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	6.40E-01	Y	---	1.46E-01	1.00E+02	---	**1E-03**	5.22E-02	-		---
TETRACHLOROETHENE	127-18-4	9.00E-02	Y	---	2.05E-02	4.00E+01	---	**5E-04**	7.34E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	2.70E-02	Y	---	6.16E-03	2.00E+00	---	**3E-03**	2.20E-03	4.10E-06	M	**9E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	4.05E-03	N	---	9.25E-04	8.00E+01	---	**1E-05**	3.30E-04	4.40E-06	M	**1E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0347H**	**Total Inhalation**	---	**2E-01**	**9E-06**
		Based on NDs only	**0E+00**	**1E-01**	**4E-06**
		Based on Detects only	**#VALUE!**	**7E-02**	**5E-06**
		Site-related only	**0E+00**	**4E-03**	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0347H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.00E-01	NA	NA	NA	4.08E-02	1.0E-08		---	---	---	4E-10	**4E-10**
TRICHLOROETHENE	79-01-6	2.70E-02	NA	NA	NA	2.20E-03	1.0E-06	kidney	---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	2.70E-02	NA		2.20E-03		3.1E-06	NHL+liver	---		7E-09		**7E-09**
VINYL CHLORIDE	75-01-4	4.05E-03	NA	NA	NA	3.30E-04	4.4E-06		---	---	---	1E-09	**1E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**365S**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.30E-02	N	---	2.97E-03	NA	---	---	1.06E-03	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	6.00E-02	N	---	1.37E-02	2.00E+00	---	**7E-03**	4.89E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	9.00E-02	N	---	2.05E-02	3.00E+01	---	**7E-04**	7.34E-03	5.00E-06		**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.50E-03	N	---	1.94E-03	2.00E-01	---	**1E-02**	6.93E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	---	1.37E-01	2.00E+00	---	**7E-02**	4.89E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.20E-01	Y	---	5.02E-02	6.00E+01	---	**8E-04**	1.79E-02	-		---
1,2-DIBROMOETHANE	106-93-4	4.05E-02	N	---	9.25E-03	9.00E+00	---	**1E-03**	3.30E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	---	2.51E-02	7.00E+00	---	**4E-03**	8.97E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.10E-01	N	---	2.51E-02	4.00E+00	---	**6E-03**	8.97E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	7.00E-02	N	---	1.60E-02	6.00E+01	---	**3E-04**	5.71E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	6.50E-02	N	---	1.48E-02	8.00E+02	---	**2E-05**	5.30E-03	1.10E-05		**6E-08**
BENZENE	71-43-2	4.60E-01	Y	---	1.05E-01	3.00E+01	---	**4E-03**	3.75E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	---	2.40E-02	1.00E+00	---	**2E-02**	8.56E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.55E-01	N	---	3.54E-02	NA	---	---	1.26E-02	3.70E-05		**5E-07**
BROMOMETHANE	74-83-9	8.00E-01	N	---	1.83E-01	5.00E+00	---	**4E-02**	6.52E-02	-		---
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	---	8.68E-02	1.00E+02	---	**9E-04**	3.10E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.00E-01	Y	---	2.28E-02	9.77E+01	---	**2E-04**	8.15E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	5.30E-01	Y	---	1.21E-01	1.00E+03	---	**1E-04**	4.32E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	---	1.83E-01	NA	---	---	6.52E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	6.90E+01	Y	---	1.58E+01	2.00E+02	---	**8E-02**	5.63E+00	-		---
M,P-XYLENE	108-38-3	1.90E+00	Y	---	4.34E-01	1.00E+02	---	**4E-03**	1.55E-01	-		---
METHYLENE CHLORIDE	75-09-2	6.00E-01	Y	---	1.37E-01	6.00E+02	---	**2E-04**	4.89E-02	1.00E-08	M	**5E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	6.10E-01	Y	---	1.39E-01	1.00E+02	---	**1E-03**	4.97E-02	-		---
TETRACHLOROETHENE	127-18-4	3.10E-01	Y	---	7.08E-02	4.00E+01	---	**2E-03**	2.53E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.00E-02	N	---	4.57E-03	2.00E+00	---	**2E-03**	1.63E-03	4.10E-06	M	**7E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	1.00E-02	N	---	2.28E-03	8.00E+01	---	**3E-05**	8.15E-04	4.40E-06	M	**4E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**365S**	**Total Inhalation**	---	**3E-01**	**6E-06**
		Based on NDs only	**0E+00**	**2E-01**	**5E-06**
		Based on Detects only	**#VALUE!**	**1E-01**	**1E-06**
		Site-related only	**0E+00**	**5E-03**	**5E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**365S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.00E-01	NA	NA	NA	4.89E-02	1.0E-08		---	---	---	5E-10	**5E-10**
TRICHLOROETHENE	79-01-6	2.00E-02	NA	NA	NA	1.63E-03	1.0E-06	kidney	---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	2.00E-02	NA		1.63E-03		3.1E-06	NHL+liver	---		5E-09		**5E-09**
VINYL CHLORIDE	75-01-4	1.00E-02	NA	NA	NA	8.15E-04	4.4E-06		---	---	---	4E-09	**4E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0366C**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	---	1.56E-02	NA	---	---	5.59E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	2.22E+00	N	---	5.06E-01	2.00E+00	---	**3E-01**	1.81E-01	3.00E-05		**5E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	---	8.23E-02	3.00E+01	---	**3E-03**	2.94E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	---	1.86E-02	2.00E-01	---	**9E-02**	6.65E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	---	5.32E-01	2.00E+00	---	**3E-01**	1.90E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.11E-01	Y	---	9.38E-02	6.00E+01	---	**2E-03**	3.35E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	---	1.76E-02	9.00E+00	---	**2E-03**	6.28E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	1.84E-01	Y	---	4.20E-02	7.00E+00	---	**6E-03**	1.50E-02	2.60E-05		**4E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	---	1.59E-02	4.00E+00	---	**4E-03**	5.67E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	---	1.12E-01	6.00E+01	---	**2E-03**	4.00E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	1.80E-01	Y	---	4.11E-02	8.00E+02	---	**5E-05**	1.47E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	7.83E-01	Y	---	1.79E-01	3.00E+01	---	**6E-03**	6.38E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	---	1.19E-01	1.00E+00	---	**1E-01**	4.24E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	---	1.53E-01	NA	---	---	5.46E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	---	8.86E-02	5.00E+00	---	**2E-02**	3.16E-02	-		---
CARBON TETRACHLORIDE	56-23-5	5.67E-01	Y	---	1.29E-01	1.00E+02	---	**1E-03**	4.62E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	6.04E-01	Y	---	1.38E-01	9.77E+01	---	**1E-03**	4.92E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	4.90E+00	Y	---	1.12E+00	1.00E+03	---	**1E-03**	4.00E-01	2.50E-06		**1E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	---	7.68E-01	NA	---	---	2.74E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	1.27E+01	Y	---	2.90E+00	2.00E+02	---	**1E-02**	1.04E+00	-		---
M,P-XYLENE	108-38-3	1.22E+01	Y	---	2.79E+00	1.00E+02	---	**3E-02**	9.95E-01	-		---
METHYLENE CHLORIDE	75-09-2	7.74E+00	Y	---	1.77E+00	6.00E+02	---	**3E-03**	6.31E-01	1.00E-08	M	**6E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	---	3.77E-01	3.00E+00	---	**1E-01**	1.35E-01	3.40E-05		**5E-06**
O-XYLENE	95-47-6	2.42E+00	Y	---	5.53E-01	1.00E+02	---	**6E-03**	1.97E-01	-		---
TETRACHLOROETHENE	127-18-4	1.07E+00	Y	---	2.44E-01	4.00E+01	---	**6E-03**	8.72E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	6.59E-02	Y	---	1.50E-02	2.00E+00	---	**8E-03**	5.37E-03	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	---	8.04E-03	2.00E+02	---	**4E-05**	2.87E-03	-		---
VINYL CHLORIDE	75-01-4	2.56E-02	N	---	5.83E-03	8.00E+01	---	**7E-05**	2.08E-03	4.40E-06	M	**9E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0366C**	**Total Inhalation**	---	**1E+00**	**3E-05**
		Based on NDs only	**0E+00**	**9E-01**	**2E-05**
		Based on Detects only	**#VALUE!**	**8E-02**	**4E-06**
		Site-related only	**0E+00**	**2E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0366C**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.74E+00	NA	NA	NA	6.31E-01	1.0E-08		---	---	---	6E-09	**6E-09**
TRICHLOROETHENE	79-01-6	6.59E-02	NA	NA	NA	5.37E-03	1.0E-06	kidney	---	---	---	5E-09	**5E-09**
TRICHLOROETHENE	79-01-6	6.59E-02	NA		5.37E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	NA	NA	NA	2.08E-03	4.4E-06		---	---	---	9E-09	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0381H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.15E-02	N	---	2.63E-03	NA	---	---	9.38E-04	5.80E-05		**5E-08**
1,3-BUTADIENE	106-99-0	5.50E-02	N	---	1.26E-02	2.00E+00	---	**6E-03**	4.48E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	4.30E-01	Y	---	9.82E-02	3.00E+01	---	**3E-03**	3.51E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	---	1.71E-03	2.00E-01	---	**9E-03**	6.12E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.50E-01	N	---	1.26E-01	2.00E+00	---	**6E-02**	4.48E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.10E-01	Y	---	4.79E-02	6.00E+01	---	**8E-04**	1.71E-02	-		---
1,2-DIBROMOETHANE	106-93-4	3.65E-02	N	---	8.33E-03	9.00E+00	---	**9E-04**	2.98E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	---	2.51E-02	7.00E+00	---	**4E-03**	8.97E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	---	2.28E-02	4.00E+00	---	**6E-03**	8.15E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	6.50E-02	N	---	1.48E-02	6.00E+01	---	**2E-04**	5.30E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	---	1.26E-02	8.00E+02	---	**2E-05**	4.48E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	7.60E-01	Y	---	1.74E-01	3.00E+01	---	**6E-03**	6.20E-02	7.80E-06		**5E-07**
BENZYL CHLORIDE	100-44-7	9.50E-02	N	---	2.17E-02	1.00E+00	---	**2E-02**	7.75E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.40E-01	N	---	3.20E-02	NA	---	---	1.14E-02	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	---	1.60E-01	5.00E+00	---	**3E-02**	5.71E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	---	9.36E-02	1.00E+02	---	**9E-04**	3.34E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	9.60E-01	Y	---	2.19E-01	9.77E+01	---	**2E-03**	7.83E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.40E+00	Y	---	5.48E-01	1.00E+03	---	**5E-04**	1.96E-01	2.50E-06		**5E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	---	1.60E-01	NA	---	---	5.71E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	2.40E+01	Y	---	5.48E+00	2.00E+02	---	**3E-02**	1.96E+00	-		---
M,P-XYLENE	108-38-3	1.00E+01	Y	---	2.28E+00	1.00E+02	---	**2E-02**	8.15E-01	-		---
METHYLENE CHLORIDE	75-09-2	2.80E-01	N	---	6.39E-02	6.00E+02	---	**1E-04**	2.28E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.70E+00	Y	---	6.16E-01	1.00E+02	---	**6E-03**	2.20E-01	-		---
TETRACHLOROETHENE	127-18-4	6.20E-02	Y	---	1.42E-02	4.00E+01	---	**4E-04**	5.06E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	1.80E-02	N	---	4.11E-03	2.00E+00	---	**2E-03**	1.47E-03	4.10E-06	M	**6E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	9.00E-03	N	---	2.05E-03	8.00E+01	---	**3E-05**	7.34E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0381H**	**Total Inhalation**	---	**2E-01**	**8E-06**
		Based on NDs only	**0E+00**	**1E-01**	**4E-06**
		Based on Detects only	**#VALUE!**	**7E-02**	**3E-06**
		Site-related only	**0E+00**	**6E-03**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0381H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.80E-01	NA	NA	NA	2.28E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	1.80E-02	NA	NA	NA	1.47E-03	1.0E-06	kidney	---	---	---	1E-09	**1E-09**
TRICHLOROETHENE	79-01-6	1.80E-02	NA		1.47E-03		3.1E-06	NHL+liver	---		5E-09		**5E-09**
VINYL CHLORIDE	75-01-4	9.00E-03	NA	NA	NA	7.34E-04	4.4E-06		---	---	---	3E-09	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0392H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.30E-02	N	---	5.25E-03	NA	---	---	1.88E-03	5.80E-05		**1E-07**
1,3-BUTADIENE	106-99-0	1.10E-01	N	---	2.51E-02	2.00E+00	---	**1E-02**	8.97E-03	3.00E-05		**3E-07**
1,4-DIOXANE	123-91-1	1.55E-01	N	---	3.54E-02	3.00E+01	---	**1E-03**	1.26E-02	5.00E-06		**6E-08**
1,1,2-TRICHLOROETHANE	79-00-5	1.50E-02	N	---	3.42E-03	2.00E-01	---	**2E-02**	1.22E-03	1.60E-05		**2E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.05E+00	N	---	2.40E-01	2.00E+00	---	**1E-01**	8.56E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.60E-01	Y	---	1.05E-01	6.00E+01	---	**2E-03**	3.75E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	---	1.60E-02	9.00E+00	---	**2E-03**	5.71E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	8.40E-02	Y	---	1.92E-02	7.00E+00	---	**3E-03**	6.85E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	2.00E-01	N	---	4.57E-02	4.00E+00	---	**1E-02**	1.63E-02	3.70E-06		**6E-08**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	---	2.97E-02	6.00E+01	---	**5E-04**	1.06E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	1.10E-01	N	---	2.51E-02	8.00E+02	---	**3E-05**	8.97E-03	1.10E-05		**1E-07**
BENZENE	71-43-2	6.30E-01	Y	---	1.44E-01	3.00E+01	---	**5E-03**	5.14E-02	7.80E-06		**4E-07**
BENZYL CHLORIDE	100-44-7	1.85E-01	N	---	4.22E-02	1.00E+00	---	**4E-02**	1.51E-02	4.90E-05		**7E-07**
BROMODICHLOROMETHANE	75-27-4	2.75E-01	N	---	6.28E-02	NA	---	---	2.24E-02	3.70E-05		**8E-07**
BROMOMETHANE	74-83-9	1.45E+00	N	---	3.31E-01	5.00E+00	---	**7E-02**	1.18E-01	-		---
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	---	8.68E-02	1.00E+02	---	**9E-04**	3.10E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	2.70E-01	Y	---	6.16E-02	9.77E+01	---	**6E-04**	2.20E-02	2.30E-05		**5E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	3.00E-01	Y	---	6.85E-02	1.00E+03	---	**7E-05**	2.45E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.40E+00	N	---	3.20E-01	NA	---	---	1.14E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL	67-63-0	2.60E+01	Y	---	5.94E+00	2.00E+02	---	**3E-02**	2.12E+00	-		---
M,P-XYLENE	108-38-3	1.20E+00	Y	---	2.74E-01	1.00E+02	---	**3E-03**	9.78E-02	-		---
METHYLENE CHLORIDE	75-09-2	3.10E-01	N	---	7.08E-02	6.00E+02	---	**1E-04**	2.53E-02	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	5.20E-01	Y	---	1.19E-01	1.00E+02	---	**1E-03**	4.24E-02	-		---
TETRACHLOROETHENE	127-18-4	7.40E-02	Y	---	1.69E-02	4.00E+01	---	**4E-04**	6.03E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	3.60E-02	N	---	8.22E-03	2.00E+00	---	**4E-03**	2.94E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	1.75E-02	N	---	4.00E-03	8.00E+01	---	**5E-05**	1.43E-03	4.40E-06	M	**6E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0392H**	**Total Inhalation**	---	**3E-01**	**9E-06**
		Based on NDs only	**0E+00**	**3E-01**	**8E-06**
		Based on Detects only	**#VALUE!**	**4E-02**	**1E-06**
		Site-related only	**0E+00**	**6E-03**	**8E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0392H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.10E-01	NA	NA	NA	2.53E-02	1.0E-08		---	---	---	3E-10	**3E-10**
TRICHLOROETHENE	79-01-6	3.60E-02	NA	NA	NA	2.94E-03	1.0E-06	kidney	---	---	---	3E-09	**3E-09**
TRICHLOROETHENE	79-01-6	3.60E-02	NA		2.94E-03		3.1E-06	NHL+liver	---		9E-09		**9E-09**
VINYL CHLORIDE	75-01-4	1.75E-02	NA	NA	NA	1.43E-03	4.4E-06		---	---	---	6E-09	**6E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**0395H**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	---	1.56E-02	NA	---	---	5.59E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	2.22E+00	N	---	5.06E-01	2.00E+00	---	**3E-01**	1.81E-01	3.00E-05		**5E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	---	8.23E-02	3.00E+01	---	**3E-03**	2.94E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	---	1.86E-02	2.00E-01	---	**9E-02**	6.65E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	---	5.32E-01	2.00E+00	---	**3E-01**	1.90E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	---	1.12E-01	6.00E+01	---	**2E-03**	4.00E-02	-		---
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	---	1.76E-02	9.00E+00	---	**2E-03**	6.28E-03	6.00E-04		**4E-06**
1,2-DICHLOROETHANE	107-06-2	1.60E-01	Y	---	3.65E-02	7.00E+00	---	**5E-03**	1.30E-02	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	---	1.59E-02	4.00E+00	---	**4E-03**	5.67E-03	3.70E-06		**2E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	---	1.12E-01	6.00E+01	---	**2E-03**	4.00E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	6.13E-02	Y	---	1.40E-02	8.00E+02	---	**2E-05**	5.00E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	5.27E-01	Y	---	1.20E-01	3.00E+01	---	**4E-03**	4.30E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	---	1.19E-01	1.00E+00	---	**1E-01**	4.24E-02	4.90E-05		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	---	1.53E-01	NA	---	---	5.46E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	---	8.86E-02	5.00E+00	---	**2E-02**	3.16E-02	-		---
CARBON TETRACHLORIDE	56-23-5	6.08E-01	Y	---	1.39E-01	1.00E+02	---	**1E-03**	4.96E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	5.31E-01	Y	---	1.21E-01	9.77E+01	---	**1E-03**	4.33E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.43E-01	Y	---	5.55E-02	1.00E+03	---	**6E-05**	1.98E-02	2.50E-06		**5E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	---	7.68E-01	NA	---	---	2.74E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL	67-63-0	3.52E+01	Y	---	8.04E+00	2.00E+02	---	**4E-02**	2.87E+00	-		---
M,P-XYLENE	108-38-3	8.65E-01	N	---	1.97E-01	1.00E+02	---	**2E-03**	7.05E-02	-		---
METHYLENE CHLORIDE	75-09-2	6.91E-01	Y	---	1.58E-01	6.00E+02	---	**3E-04**	5.63E-02	1.00E-08	M	**6E-10**
NAPHTHALENE	91-20-3	1.65E+00	N	---	3.77E-01	3.00E+00	---	**1E-01**	1.35E-01	3.40E-05		**5E-06**
O-XYLENE	95-47-6	4.34E-01	N	---	9.90E-02	1.00E+02	---	**1E-03**	3.53E-02	-		---
TETRACHLOROETHENE	127-18-4	2.70E-01	Y	---	6.16E-02	4.00E+01	---	**2E-03**	2.20E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	2.17E-01	Y	---	4.95E-02	2.00E+00	---	**2E-02**	1.77E-02	4.10E-06	M	**7E-08**
VINYL ACETATE	108-05-4	3.52E-02	N	---	8.04E-03	2.00E+02	---	**4E-05**	2.87E-03	-		---
VINYL CHLORIDE	75-01-4	2.56E-02	N	---	5.83E-03	8.00E+01	---	**7E-05**	2.08E-03	4.40E-06	M	**9E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**0395H**	**Total Inhalation**	---	**1E+00**	**3E-05**
		Based on NDs only	**0E+00**	**9E-01**	**2E-05**
		Based on Detects only	**#VALUE!**	**8E-02**	**2E-06**
		Site-related only	**0E+00**	**3E-02**	**2E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**0395H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.91E-01	NA	NA	NA	5.63E-02	1.0E-08		---	---	---	6E-10	**6E-10**
TRICHLOROETHENE	79-01-6	2.17E-01	NA	NA	NA	1.77E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.17E-01	NA		1.77E-02		3.1E-06	NHL+liver	---		5E-08		**5E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	NA	NA	NA	2.08E-03	4.4E-06		---	---	---	9E-09	**9E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**B6-IA**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	8.00E-02	N	---	1.83E-02	NA	---	---	6.52E-03	5.80E-05		**4E-07**
1,3-BUTADIENE	106-99-0	2.00E-01	Y	---	4.57E-02	2.00E+00	---	**2E-02**	1.63E-02	3.00E-05		**5E-07**
1,4-DIOXANE	123-91-1	3.50E-01	Y	---	7.99E-02	3.00E+01	---	**3E-03**	2.85E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	6.00E-02	N	---	1.37E-02	2.00E-01	---	**7E-02**	4.89E-03	1.60E-05		**8E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	---	1.37E-01	2.00E+00	---	**7E-02**	4.89E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.90E-01	Y	---	1.80E-01	6.00E+01	---	**3E-03**	6.44E-02	-		---
1,2-DIBROMOETHANE	106-93-4	2.80E-02	Y	---	6.39E-03	9.00E+00	---	**7E-04**	2.28E-03	6.00E-04		**1E-06**
1,2-DICHLOROETHANE	107-06-2	3.50E-01	Y	---	7.99E-02	7.00E+00	---	**1E-02**	2.85E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	1.30E-01	Y	---	2.97E-02	4.00E+00	---	**7E-03**	1.06E-02	3.70E-06		**4E-08**
1,3,5-Trimethylbenzene	108-67-8	2.80E-01	Y	---	6.39E-02	6.00E+01	---	**1E-03**	2.28E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	9.00E-02	N	---	2.05E-02	8.00E+02	---	**3E-05**	7.34E-03	1.10E-05		**8E-08**
BENZENE	71-43-2	1.10E+00	Y	---	2.51E-01	3.00E+01	---	**8E-03**	8.97E-02	7.80E-06		**7E-07**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	---	1.94E-02	1.00E+00	---	**2E-02**	6.93E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	1.70E-01	Y	---	3.88E-02	NA	---	---	1.39E-02	3.70E-05		**5E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	---	1.60E-01	5.00E+00	---	**3E-02**	5.71E-02	-		---
CARBON TETRACHLORIDE	56-23-5	6.00E-01	Y	---	1.37E-01	1.00E+02	---	**1E-03**	4.89E-02	6.00E-06		**3E-07**
CHLOROFORM	67-66-3	1.40E+00	Y	---	3.20E-01	9.77E+01	---	**3E-03**	1.14E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	2.60E+02	Y	---	5.94E+01	7.00E+01	---	**8E-01**	2.12E+01	-		---
ETHYLBENZENE	100-41-4	1.50E+00	Y	---	3.42E-01	1.00E+03	---	**3E-04**	1.22E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	---	1.94E-01	NA	---	---	6.93E-02	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	3.90E+01	Y	---	8.90E+00	2.00E+02	---	**4E-02**	3.18E+00	-		---
M,P-XYLENE	108-38-3	8.70E+00	Y	---	1.99E+00	1.00E+02	---	**2E-02**	7.09E-01	-		---
METHYLENE CHLORIDE	75-09-2	2.90E+00	Y	---	6.62E-01	6.00E+02	---	**1E-03**	2.36E-01	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.60E+00	Y	---	5.94E-01	1.00E+02	---	**6E-03**	2.12E-01	-		---
TETRACHLOROETHENE	127-18-4	9.16E+02	Y	---	2.09E+02	4.00E+01	---	**5E+00**	7.47E+01	2.60E-07		**2E-05**
TRICHLOROETHENE	79-01-6	7.13E+00	Y	---	1.63E+00	2.00E+00	---	**8E-01**	5.81E-01	4.10E-06	M	**2E-06**
VINYL ACETATE	108-05-4	3.20E+01	Y	---	7.31E+00	2.00E+02	---	**4E-02**	2.61E+00	-		---
VINYL CHLORIDE	75-01-4	6.00E-02	N	---	1.37E-02	8.00E+01	---	**2E-04**	4.89E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**B6-IA**	**Total Inhalation**	---	**7E+00**	**3E-05**
		Based on NDs only	**0E+00**	**2E-01**	**2E-06**
		Based on Detects only	**#VALUE!**	**7E+00**	**3E-05**
		Site-related only	**0E+00**	**6E+00**	**2E-05**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**B6-IA**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.90E+00	NA	NA	NA	2.36E-01	1.0E-08		---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	7.13E+00	NA	NA	NA	5.81E-01	1.0E-06	kidney	---	---	---	6E-07	**6E-07**
TRICHLOROETHENE	79-01-6	7.13E+00	NA		5.81E-01		3.1E-06	NHL+liver	---		2E-06		**2E-06**
VINYL CHLORIDE	75-01-4	6.00E-02	NA	NA	NA	4.89E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**B7-IA**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	8.00E-02	N	---	1.83E-02	NA	---	---	6.52E-03	5.80E-05		**4E-07**
1,3-BUTADIENE	106-99-0	1.70E-01	Y	---	3.88E-02	2.00E+00	---	**2E-02**	1.39E-02	3.00E-05		**4E-07**
1,4-DIOXANE	123-91-1	1.20E+00	Y	---	2.74E-01	3.00E+01	---	**9E-03**	9.78E-02	5.00E-06		**5E-07**
1,1,2-TRICHLOROETHANE	79-00-5	6.00E-02	N	---	1.37E-02	2.00E-01	---	**7E-02**	4.89E-03	1.60E-05		**8E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	---	1.48E-01	2.00E+00	---	**7E-02**	5.30E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E+00	Y	---	3.20E-01	6.00E+01	---	**5E-03**	1.14E-01	-		---
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	---	1.60E-02	9.00E+00	---	**2E-03**	5.71E-03	6.00E-04		**3E-06**
1,2-DICHLOROETHANE	107-06-2	5.70E-01	Y	---	1.30E-01	7.00E+00	---	**2E-02**	4.65E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	4.30E-01	Y	---	9.82E-02	4.00E+00	---	**2E-02**	3.51E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	4.80E-01	Y	---	1.10E-01	6.00E+01	---	**2E-03**	3.91E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	9.00E-02	N	---	2.05E-02	8.00E+02	---	**3E-05**	7.34E-03	1.10E-05		**8E-08**
BENZENE	71-43-2	2.50E+00	Y	---	5.71E-01	3.00E+01	---	**2E-02**	2.04E-01	7.80E-06		**2E-06**
BENZYL CHLORIDE	100-44-7	7.00E-02	N	---	1.60E-02	1.00E+00	---	**2E-02**	5.71E-03	4.90E-05		**3E-07**
BROMODICHLOROMETHANE	75-27-4	8.50E-02	N	---	1.94E-02	NA	---	---	6.93E-03	3.70E-05		**3E-07**
BROMOMETHANE	74-83-9	1.95E-01	N	---	4.45E-02	5.00E+00	---	**9E-03**	1.59E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	---	1.05E-01	1.00E+02	---	**1E-03**	3.75E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	2.30E-01	Y	---	5.25E-02	9.77E+01	---	**5E-04**	1.88E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	7.20E+02	Y	---	1.64E+02	7.00E+01	---	**2E+00**	5.87E+01	-		---
ETHYLBENZENE	100-41-4	1.80E+00	Y	---	4.11E-01	1.00E+03	---	**4E-04**	1.47E-01	2.50E-06		**4E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	9.00E-01	N	---	2.05E-01	NA	---	---	7.34E-02	2.20E-05		**2E-06**
ISOPROPYL ALCOHOL	67-63-0	2.20E+01	Y	---	5.02E+00	2.00E+02	---	**3E-02**	1.79E+00	-		---
M,P-XYLENE	108-38-3	5.40E+00	Y	---	1.23E+00	1.00E+02	---	**1E-02**	4.40E-01	-		---
METHYLENE CHLORIDE	75-09-2	5.20E+00	Y	---	1.19E+00	6.00E+02	---	**2E-03**	4.24E-01	1.00E-08	M	**4E-09**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.40E+00	Y	---	5.48E-01	1.00E+02	---	**5E-03**	1.96E-01	-		---
TETRACHLOROETHENE	127-18-4	4.76E+00	Y	---	1.09E+00	4.00E+01	---	**3E-02**	3.88E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	8.00E+00	Y	---	1.83E+00	2.00E+00	---	**9E-01**	6.52E-01	4.10E-06	M	**3E-06**
VINYL ACETATE	108-05-4	7.50E+00	Y	---	1.71E+00	2.00E+02	---	**9E-03**	6.12E-01	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	---	1.48E-02	8.00E+01	---	**2E-04**	5.30E-03	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**B7-IA**	**Total Inhalation**	---	**4E+00**	**1E-05**
		Based on NDs only	**0E+00**	**2E-01**	**6E-06**
		Based on Detects only	**#VALUE!**	**3E+00**	**8E-06**
		Site-related only	**0E+00**	**9E-01**	**3E-06**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**B7-IA**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.20E+00	NA	NA	NA	4.24E-01	1.0E-08		---	---	---	4E-09	**4E-09**
TRICHLOROETHENE	79-01-6	8.00E+00	NA	NA	NA	6.52E-01	1.0E-06	kidney	---	---	---	7E-07	**7E-07**
TRICHLOROETHENE	79-01-6	8.00E+00	NA		6.52E-01		3.1E-06	NHL+liver	---		2E-06		**2E-06**
VINYL CHLORIDE	75-01-4	6.50E-02	NA	NA	NA	5.30E-03	4.4E-06		---	---	---	2E-08	**2E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**B13-I**

Pathway:
Inhalation of Indoor Air

		RME child	RME adult			RME lifetime
	TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA	NA	---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA	NA	---	---	2.00E+00	---	---	---	3.00E-05		---
1,4-DIOXANE	123-91-1	NA	NA	---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA	NA	---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA	NA	---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA	NA	---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA	NA	---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA	NA	---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA	NA	---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA	NA	---	---	3.00E+01	---	---	---	7.80E-06		---
BENZYL CHLORIDE	100-44-7	NA	NA	---	---	1.00E+00	---	---	---	4.90E-05		---
BROMODICHLOROMETHANE	75-27-4	NA	NA	---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA	NA	---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA	NA	---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA	NA	---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA	NA	---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA	NA	---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	NA	NA	---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA	NA	---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA	NA	---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA	NA	---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.40E-01	N	---	7.76E-02	4.00E+01	---	**2E-03**	2.77E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.70E-01	N	---	6.16E-02	2.00E+00	---	**3E-02**	2.20E-02	4.10E-06	M	**9E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**B13-I**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**B13-I**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	NA	#VALUE!	1.0E-08		---	---	---	#VALUE!	---
TRICHLOROETHENE	79-01-6	2.70E-01	NA	NA	NA	2.20E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.70E-01	NA		2.20E-02		3.1E-06	NHL+liver	---		7E-08		**7E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	NA	#VALUE!	4.4E-06		---	---	---	#VALUE!	---

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**B20-I**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	---	2.51E-03	NA	---	---	8.97E-04	5.80E-05		**5E-08**
1,3-BUTADIENE	106-99-0	8.40E-01	Y	---	1.92E-01	2.00E+00	---	**1E-01**	6.85E-02	3.00E-05		**2E-06**
1,4-DIOXANE	123-91-1	7.50E-02	N	---	1.71E-02	3.00E+01	---	**6E-04**	6.12E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	---	1.60E-03	2.00E-01	---	**8E-03**	5.71E-04	1.60E-05		**9E-09**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	---	1.14E-01	2.00E+00	---	**6E-02**	4.08E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E-01	Y	---	2.74E-02	6.00E+01	---	**5E-04**	9.78E-03	-		---
1,2-DIBROMOETHANE	106-93-4	3.40E-02	N	---	7.76E-03	9.00E+00	---	**9E-04**	2.77E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	9.40E-02	Y	---	2.15E-02	7.00E+00	---	**3E-03**	7.66E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	---	2.17E-02	4.00E+00	---	**5E-03**	7.75E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	---	1.37E-02	6.00E+01	---	**2E-04**	4.89E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	3.10E-01	Y	---	7.08E-02	8.00E+02	---	**9E-05**	2.53E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	5.20E-01	Y	---	1.19E-01	3.00E+01	---	**4E-03**	4.24E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	---	2.05E-02	1.00E+00	---	**2E-02**	7.34E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	---	2.97E-02	NA	---	---	1.06E-02	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	7.00E-01	N	---	1.60E-01	5.00E+00	---	**3E-02**	5.71E-02	-		---
CARBON TETRACHLORIDE	56-23-5	3.90E-01	Y	---	8.90E-02	1.00E+02	---	**9E-04**	3.18E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.30E-01	Y	---	7.53E-02	9.77E+01	---	**8E-04**	2.69E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.40E-01	Y	---	3.20E-02	1.00E+03	---	**3E-05**	1.14E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	---	1.48E-01	NA	---	---	5.30E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	1.30E+01	Y	---	2.97E+00	2.00E+02	---	**1E-02**	1.06E+00	-		---
M,P-XYLENE	108-38-3	4.00E-01	Y	---	9.13E-02	1.00E+02	---	**9E-04**	3.26E-02	-		---
METHYLENE CHLORIDE	75-09-2	2.95E-01	N	---	6.74E-02	6.00E+02	---	**1E-04**	2.41E-02	1.00E-08	M	**2E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.40E-01	Y	---	3.20E-02	1.00E+02	---	**3E-04**	1.14E-02	-		---
TETRACHLOROETHENE	127-18-4	1.40E-01	Y	---	3.20E-02	4.00E+01	---	**8E-04**	1.14E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	2.70E-01	N	---	6.16E-02	2.00E+00	---	**3E-02**	2.20E-02	4.10E-06	M	**9E-08**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.50E-03	N	---	1.94E-03	8.00E+01	---	**2E-05**	6.93E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**B20-I**	**Total Inhalation**	---	**3E-01**	**7E-06**
		Based on NDs only	**0E+00**	**2E-01**	**4E-06**
		Based on Detects only	**#VALUE!**	**1E-01**	**4E-06**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**B20-I**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.95E-01	NA	NA	NA	2.41E-02	1.0E-08		---	---	---	2E-10	**2E-10**
TRICHLOROETHENE	79-01-6	2.70E-01	NA	NA	NA	2.20E-02	1.0E-06	kidney	---	---	---	2E-08	**2E-08**
TRICHLOROETHENE	79-01-6	2.70E-01	NA		2.20E-02		3.1E-06	NHL+liver	---		7E-08		**7E-08**
VINYL CHLORIDE	75-01-4	8.50E-03	NA	NA	NA	6.93E-04	4.4E-06		---	---	---	3E-09	**3E-09**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Indoor Worker**
Exposure Area:	**B32**

Pathway:
Inhalation of Indoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.20E-02	N	---	2.74E-03	NA	---	---	9.78E-04	5.80E-05		**6E-08**
1,3-BUTADIENE	106-99-0	5.50E-02	N	---	1.26E-02	2.00E+00	---	**6E-03**	4.48E-03	3.00E-05		**1E-07**
1,4-DIOXANE	123-91-1	8.00E-02	N	---	1.83E-02	3.00E+01	---	**6E-04**	6.52E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	8.00E-03	N	---	1.83E-03	2.00E-01	---	**9E-03**	6.52E-04	1.60E-05		**1E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.50E-01	N	---	1.26E-01	2.00E+00	---	**6E-02**	4.48E-02	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E-01	Y	---	3.20E-02	6.00E+01	---	**5E-04**	1.14E-02	-		---
1,2-DIBROMOETHANE	106-93-4	3.80E-02	N	---	8.68E-03	9.00E+00	---	**1E-03**	3.10E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	3.30E-01	Y	---	7.53E-02	7.00E+00	---	**1E-02**	2.69E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	---	2.40E-02	4.00E+00	---	**6E-03**	8.56E-03	3.70E-06		**3E-08**
1,3,5-Trimethylbenzene	108-67-8	7.00E-02	N	---	1.60E-02	6.00E+01	---	**3E-04**	5.71E-03	-		---
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	---	1.37E-02	8.00E+02	---	**2E-05**	4.89E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	4.00E-01	Y	---	9.13E-02	3.00E+01	---	**3E-03**	3.26E-02	7.80E-06		**3E-07**
BENZYL CHLORIDE	100-44-7	1.00E-01	N	---	2.28E-02	1.00E+00	---	**2E-02**	8.15E-03	4.90E-05		**4E-07**
BROMODICHLOROMETHANE	75-27-4	1.45E-01	N	---	3.31E-02	NA	---	---	1.18E-02	3.70E-05		**4E-07**
BROMOMETHANE	74-83-9	7.50E-01	N	---	1.71E-01	5.00E+00	---	**3E-02**	6.12E-02	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	---	9.13E-02	1.00E+02	---	**9E-04**	3.26E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	4.80E-01	Y	---	1.10E-01	9.77E+01	---	**1E-03**	3.91E-02	2.30E-05		**9E-07**
ETHYL ACETATE	141-78-6	NA	NA	---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.20E-01	Y	---	2.74E-02	1.00E+03	---	**3E-05**	9.78E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	---	1.71E-01	NA	---	---	6.12E-02	2.20E-05		**1E-06**
ISOPROPYL ALCOHOL	67-63-0	5.30E+01	Y	---	1.21E+01	2.00E+02	---	**6E-02**	4.32E+00	-		---
M,P-XYLENE	108-38-3	3.90E-01	Y	---	8.90E-02	1.00E+02	---	**9E-04**	3.18E-02	-		---
METHYLENE CHLORIDE	75-09-2	3.60E-01	N	---	8.22E-02	6.00E+02	---	**1E-04**	2.94E-02	1.00E-08	M	**3E-10**
NAPHTHALENE	91-20-3	NA	NA	---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.60E-01	Y	---	3.65E-02	1.00E+02	---	**4E-04**	1.30E-02	-		---
TETRACHLOROETHENE	127-18-4	4.80E-02	Y	---	1.10E-02	4.00E+01	---	**3E-04**	3.91E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	1.90E-02	N	---	4.34E-03	2.00E+00	---	**2E-03**	1.55E-03	4.10E-06	M	**6E-09**
VINYL ACETATE	108-05-4	NA	NA	---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	9.50E-03	N	---	2.17E-03	8.00E+01	---	**3E-05**	7.75E-04	4.40E-06	M	**3E-09**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Indoor Worker	**B32**	**Total Inhalation**	---	**2E-01**	**6E-06**
		Based on NDs only	**0E+00**	**1E-01**	**4E-06**
		Based on Detects only	**#VALUE!**	**8E-02**	**2E-06**
		Site-related only	**0E+00**	**3E-03**	**4E-08**

ATTACHMENT H.6. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Indoor Worker**
Exposure Area:	**B32**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.60E-01	NA	NA	NA	2.94E-02	1.0E-08		---	---	---	3E-10	**3E-10**
TRICHLOROETHENE	79-01-6	1.90E-02	NA	NA	NA	1.55E-03	1.0E-06	kidney	---	---	---	2E-09	**2E-09**
TRICHLOROETHENE	79-01-6	1.90E-02	NA		1.55E-03		3.1E-06	NHL+liver	---		5E-09		**5E-09**
VINYL CHLORIDE	75-01-4	9.50E-03	NA	NA	NA	7.75E-04	4.4E-06		---	---	---	3E-09	**3E-09**

Attachment H.7

Detailed Human Health Risk Calculations for Indoor Air, By Method

CDM Smith

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0001H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.15E+00	Y	4.94E+00	4.94E+00	4.00E+01	**1E-01**	**1E-01**	1.83E+00	2.60E-07		**5E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0001H**	**Total Inhalation**	**2E-01**	**2E-01**	**1E-06**
		ND risk contribution	**1E-01**	**1E-01**	**5E-07**
		Risk for Detects only	**1E-01**	**1E-01**	**5E-07**
		Site-related only	**2E-01**	**2E-01**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0001H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
1,4-DIOXANE	123-91-1	9.00E-02	N	8.63E-02	8.63E-02	3.00E+01	**3E-03**	**3E-03**	3.21E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	1.33E+00	Y	1.28E+00	1.28E+00	7.00E+00	**2E-01**	**2E-01**	4.75E-01	2.60E-05		**1E-05**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	8.64E-01	8.64E-01	8.00E+02	**1E-03**	**1E-03**	3.21E-01	1.10E-05		**4E-06**
BENZENE	71-43-2	6.50E-01	Y	6.23E-01	6.23E-01	3.00E+01	**2E-02**	**2E-02**	2.32E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		---
CARBON TETRACHLORIDE	56-23-5	1.10E+00	Y	1.05E+00	1.05E+00	1.00E+02	**1E-02**	**1E-02**	3.92E-01	6.00E-06		**2E-06**
CHLOROFORM	67-66-3	1.32E+00	Y	1.26E+00	1.26E+00	9.77E+01	**1E-02**	**1E-02**	4.69E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	2.20E+01	Y	2.11E+01	2.11E+01	7.00E+01	**3E-01**	**3E-01**	7.84E+00	-		---
ETHYLBENZENE	100-41-4	2.60E+00	Y	2.50E+00	2.50E+00	1.00E+03	**2E-03**	**2E-03**	9.27E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	9.99E+00	Y	9.58E+00	9.58E+00	1.00E+02	**1E-01**	**1E-01**	3.56E+00	-		---
METHYLENE CHLORIDE	75-09-2	2.60E+00	Y	2.50E+00	2.50E+00	6.00E+02	**4E-03**	**4E-03**	M	1.00E-08	M	**3E-08**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.43E+00	Y	2.33E+00	2.33E+00	1.00E+02	**2E-02**	**2E-02**	8.66E-01	-		---
TETRACHLOROETHENE	127-18-4	1.10E+00	Y	1.05E+00	1.05E+00	4.00E+01	**3E-02**	**3E-02**	3.92E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	1.35E-01	N	1.29E-01	1.29E-01	2.00E+00	**6E-02**	**6E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	3.37E-01	3.37E-01	2.00E+02	**2E-03**	**2E-03**	1.25E-01	-		---
VINYL CHLORIDE	75-01-4	1.90E-01	Y	1.82E-01	1.82E-01	8.00E+01	**2E-03**	**2E-03**	M	4.40E-06	M	**8E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0001H**	**Total Inhalation**	**5E+00**	**5E+00**	**2E-04**
		ND risk contribution	**4E+00**	**4E+00**	**2E-04**
		Risk for Detects only	**7E-01**	**7E-01**	**3E-05**
		Site-related only	**1E-01**	**1E-01**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0001H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0001H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0001H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.60E+00	7.13E-01	4.28E-01	1.07E+00	3.57E-01	1.0E-08		7E-09	4E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	1.35E-01	3.70E-02	2.22E-02	5.55E-02	1.85E-02	1.0E-06	kidney	4E-08	2E-08	6E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.35E-01	1.11E-02		3.70E-02		3.1E-06	NHL+liver	3E-08		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	1.90E-01	5.21E-02	3.12E-02	7.81E-02	2.60E-02	4.4E-06		2E-07	1E-07	3E-07	1E-07	**8E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0002H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.02E+00	Y	9.78E-01	9.78E-01	4.00E+01	**2E-02**	**2E-02**	3.63E-01	2.60E-07		**9E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0002H**	**Total Inhalation**	**1E-01**	**1E-01**	**6E-07**
		ND risk contribution	**1E-01**	**1E-01**	**5E-07**
		Risk for Detects only	**2E-02**	**2E-02**	**9E-08**
		Site-related only	**1E-01**	**1E-01**	**6E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0002H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
1,4-DIOXANE	123-91-1	9.00E-02	N	8.63E-02	8.63E-02	3.00E+01	**3E-03**	**3E-03**	3.21E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	2.92E-01	2.92E-01	7.00E+00	**4E-02**	**4E-02**	1.09E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	8.64E-01	8.64E-01	8.00E+02	**1E-03**	**1E-03**	3.21E-01	1.10E-05		**4E-06**
BENZENE	71-43-2	5.50E-01	Y	5.27E-01	5.27E-01	3.00E+01	**2E-02**	**2E-02**	1.96E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.32E+00	Y	1.26E+00	1.26E+00	9.77E+01	**1E-02**	**1E-02**	4.69E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	1.84E+01	Y	1.76E+01	1.76E+01	7.00E+01	**3E-01**	**3E-01**	6.54E+00	-		---
ETHYLBENZENE	100-41-4	7.38E-01	Y	7.07E-01	7.07E-01	1.00E+03	**7E-04**	**7E-04**	2.63E-01	2.50E-06		**7E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	5.40E+00	Y	5.18E+00	5.18E+00	1.00E+02	**5E-02**	**5E-02**	1.92E+00	-		---
METHYLENE CHLORIDE	75-09-2	8.68E+00	Y	8.32E+00	8.32E+00	6.00E+02	**1E-02**	**1E-02**	M	1.00E-08	M	**9E-08**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	9.70E-01	Y	9.30E-01	9.30E-01	1.00E+02	**9E-03**	**9E-03**	3.45E-01	-		---
TETRACHLOROETHENE	127-18-4	1.42E+00	Y	1.36E+00	1.36E+00	4.00E+01	**3E-02**	**3E-02**	5.07E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	2.78E-01	2.78E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**6E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	3.37E-01	3.37E-01	2.00E+02	**2E-03**	**2E-03**	1.25E-01	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0002H**	**Total Inhalation**	**5E+00**	**5E+00**	**2E-04**
		ND risk contribution	**4E+00**	**4E+00**	**2E-04**
		Risk for Detects only	**5E-01**	**5E-01**	**1E-05**
		Site-related only	**2E-01**	**2E-01**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0002H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0002H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0002H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.68E+00	2.38E+00	1.43E+00	3.57E+00	1.19E+00	1.0E-08		2E-08	1E-08	4E-08	1E-08	**9E-08**
TRICHLOROETHENE	79-01-6	2.90E-01	7.95E-02	4.77E-02	1.19E-01	3.97E-02	1.0E-06	kidney	8E-08	5E-08	1E-07	4E-08	**3E-07**
TRICHLOROETHENE	79-01-6	2.90E-01	2.38E-02		7.95E-02		3.1E-06	NHL+liver	7E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0003H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.20E+00	Y	3.07E+00	3.07E+00	4.00E+01	**8E-02**	**8E-02**	1.14E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0003H**	**Total Inhalation**	**1E-01**	**1E-01**	**4E-07**
		ND risk contribution	**2E-02**	**2E-02**	**1E-07**
		Risk for Detects only	**8E-02**	**8E-02**	**3E-07**
		Site-related only	**1E-01**	**1E-01**	**4E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0003H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	3.30E+00	Y	3.16E+00	3.16E+00	NA	---	---	1.18E+00	5.80E-05		**7E-05**
1,3-BUTADIENE	106-99-0	2.90E-01	Y	2.78E-01	2.78E-01	2.00E+00	**1E-01**	**1E-01**	1.03E-01	3.00E-05		**3E-06**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	7.67E-01	7.67E-01	1.00E+00	**8E-01**	**8E-01**	2.85E-01	4.90E-05		**1E-05**
1,4-DIOXANE	123-91-1	2.95E-01	N	2.83E-01	2.83E-01	3.00E+01	**9E-03**	**9E-03**	1.05E-01	5.00E-06		**5E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	1.07E+00	1.07E+00	2.00E+00	**5E-01**	**5E-01**	3.96E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.60E+01	Y	2.50E+01	2.50E+01	6.00E+01	**4E-01**	**4E-01**	9.27E+00	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	2.00E-01	Y	1.92E-01	1.92E-01	7.00E+00	**3E-02**	**3E-02**	7.12E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.90E+00	Y	7.58E+00	7.58E+00	6.00E+01	**1E-01**	**1E-01**	2.81E+00	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	4.32E-01	4.32E-01	8.00E+02	**5E-04**	**5E-04**	1.61E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	2.20E+01	Y	2.11E+01	2.11E+01	3.00E+01	**7E-01**	**7E-01**	7.85E+00	7.80E-06		**6E-05**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	5.00E-01	N	4.79E-01	4.79E-01	5.00E+00	**1E-01**	**1E-01**	1.78E-01	-		---
CARBON TETRACHLORIDE	56-23-5	6.30E-01	Y	6.04E-01	6.04E-01	1.00E+02	**6E-03**	**6E-03**	2.24E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	4.73E+01	Y	4.54E+01	4.54E+01	9.77E+01	**5E-01**	**5E-01**	1.69E+01	2.30E-05		**4E-04**
ETHYL ACETATE	141-78-6	1.44E+01	Y	1.38E+01	1.38E+01	7.00E+01	**2E-01**	**2E-01**	5.13E+00	-		---
ETHYLBENZENE	100-41-4	1.30E+01	Y	1.25E+01	1.25E+01	1.00E+03	**1E-02**	**1E-02**	4.64E+00	2.50E-06		**1E-05**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	2.60E+01	Y	2.49E+01	2.49E+01	2.00E+02	**1E-01**	**1E-01**	9.26E+00	-		---
M,P-XYLENE	108-38-3	6.95E+01	Y	6.66E+01	6.66E+01	1.00E+02	**7E-01**	**7E-01**	2.47E+01	-		---
METHYLENE CHLORIDE	75-09-2	9.50E-01	Y	9.11E-01	9.11E-01	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**9E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.20E+01	Y	2.11E+01	2.11E+01	1.00E+02	**2E-01**	**2E-01**	7.84E+00	-		---
TETRACHLOROETHENE	127-18-4	1.70E+01	Y	1.63E+01	1.63E+01	4.00E+01	**4E-01**	**4E-01**	6.05E+00	2.60E-07		**2E-06**
TRICHLOROETHENE	79-01-6	4.10E-02	Y	3.93E-02	3.93E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**9E-08**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	1.84E-01	1.84E-01	8.00E+01	**2E-03**	**2E-03**	M	4.40E-06	M	**8E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0003H**	**Total Inhalation**	**7E+00**	**7E+00**	**7E-04**
		ND risk contribution	**4E+00**	**4E+00**	**2E-04**
		Risk for Detects only	**4E+00**	**4E+00**	**5E-04**
		Site-related only	**4E-01**	**4E-01**	**3E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0003H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	1.20E-01	Y	1.15E-01	1.15E-01	7.00E+00	**2E-02**	**2E-02**	4.27E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	1.90E-02	N	1.82E-02	1.82E-02	8.00E+02	**2E-05**	**2E-05**	6.77E-03	1.10E-05		**7E-08**
BENZENE	71-43-2	6.90E+00	Y	6.62E+00	6.62E+00	3.00E+01	**2E-01**	**2E-01**	2.46E+00	7.80E-06		**2E-05**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	4.03E-01	4.03E-01	1.00E+02	**4E-03**	**4E-03**	1.50E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	1.00E+00	Y	9.59E-01	9.59E-01	9.77E+01	**1E-02**	**1E-02**	3.56E-01	2.30E-05		**8E-06**
ETHYL ACETATE	141-78-6	5.90E+00	Y	5.66E+00	5.66E+00	7.00E+01	**8E-02**	**8E-02**	2.10E+00	-		---
ETHYLBENZENE	100-41-4	2.60E+00	Y	2.49E+00	2.49E+00	1.00E+03	**2E-03**	**2E-03**	9.26E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.00E+01	Y	9.59E+00	9.59E+00	1.00E+02	**1E-01**	**1E-01**	3.56E+00	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	7.00E-02	Y	6.71E-02	6.71E-02	3.00E+00	**2E-02**	**2E-02**	2.49E-02	3.40E-05		**8E-07**
O-XYLENE	95-47-6	3.00E+00	Y	2.88E+00	2.88E+00	1.00E+02	**3E-02**	**3E-02**	1.07E+00	-		---
TETRACHLOROETHENE	127-18-4	8.00E-01	Y	7.67E-01	7.67E-01	4.00E+01	**2E-02**	**2E-02**	2.85E-01	2.60E-07		**7E-08**
TRICHLOROETHENE	79-01-6	3.10E-02	Y	2.97E-02	2.97E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0003H**	**Total Inhalation**	**5E-01**	**5E-01**	**3E-05**
		Based on NDs only	**2E-05**	**2E-05**	**7E-08**
		Based on Detects only	**5E-01**	**5E-01**	**3E-05**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0003H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.50E-01	2.60E-01	1.56E-01	3.90E-01	1.30E-01	1.0E-08		3E-09	2E-09	4E-09	1E-09	**9E-09**
TRICHLOROETHENE	79-01-6	4.10E-02	1.12E-02	6.74E-03	1.68E-02	5.62E-03	1.0E-06	kidney	1E-08	7E-09	2E-08	6E-09	**4E-08**
TRICHLOROETHENE	79-01-6	4.10E-02	3.37E-03		1.12E-02		3.1E-06	NHL+liver	1E-08		3E-08		**5E-08**
VINYL CHLORIDE	75-01-4	1.92E-01	5.25E-02	3.15E-02	7.87E-02	2.62E-02	4.4E-06		2E-07	1E-07	3E-07	1E-07	**8E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	3.10E-02	8.49E-03	5.10E-03	1.27E-02	4.25E-03	1.0E-06	kidney	8E-09	5E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	3.10E-02	2.55E-03		8.49E-03		3.1E-06	NHL+liver	8E-09		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0004H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	3.36E-01	3.36E-01	4.00E+01	**8E-03**	**8E-03**	1.25E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0004H**	**Total Inhalation**	**1E-01**	**1E-01**	**6E-07**
		ND risk contribution	**1E-01**	**1E-01**	**6E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**1E-01**	**1E-01**	**6E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0004H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
1,4-DIOXANE	123-91-1	9.00E-02	N	8.63E-02	8.63E-02	3.00E+01	**3E-03**	**3E-03**	3.21E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	2.92E-01	2.92E-01	7.00E+00	**4E-02**	**4E-02**	1.09E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	8.64E-01	8.64E-01	8.00E+02	**1E-03**	**1E-03**	3.21E-01	1.10E-05		**4E-06**
BENZENE	71-43-2	6.71E-01	Y	6.43E-01	6.43E-01	3.00E+01	**2E-02**	**2E-02**	2.39E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	8.50E-01	Y	8.15E-01	8.15E-01	9.77E+01	**8E-03**	**8E-03**	3.03E-01	2.30E-05		**7E-06**
ETHYL ACETATE	141-78-6	1.60E+00	Y	1.53E+00	1.53E+00	7.00E+01	**2E-02**	**2E-02**	5.70E-01	-		**---**
ETHYLBENZENE	100-41-4	3.25E-01	N	3.12E-01	3.12E-01	1.00E+03	**3E-04**	**3E-04**	1.16E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	**---**	**---**	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	9.99E-01	Y	9.58E-01	9.58E-01	1.00E+02	**1E-02**	**1E-02**	3.56E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	2.10E+00	Y	2.01E+00	2.01E+00	6.00E+02	**3E-03**	**3E-03**	M	1.00E-08	M	**2E-08**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	3.25E-01	N	3.12E-01	3.12E-01	1.00E+02	**3E-03**	**3E-03**	1.16E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.70E-01	N	1.63E-01	1.63E-01	4.00E+01	**4E-03**	**4E-03**	6.05E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	1.35E-01	N	1.29E-01	1.29E-01	2.00E+00	**6E-02**	**6E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	3.37E-01	3.37E-01	2.00E+02	**2E-03**	**2E-03**	1.25E-01	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0004H**	**Total Inhalation**	**4E+00**	**4E+00**	**2E-04**
		ND risk contribution	**4E+00**	**4E+00**	**2E-04**
		Risk for Detects only	**6E-02**	**6E-02**	**9E-06**
		Site-related only	**7E-02**	**7E-02**	**7E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0004H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0004H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0004H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.10E+00	5.75E-01	3.45E-01	8.63E-01	2.88E-01	1.0E-08		6E-09	3E-09	9E-09	3E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.35E-01	3.70E-02	2.22E-02	5.55E-02	1.85E-02	1.0E-06	kidney	4E-08	2E-08	6E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.35E-01	1.11E-02		3.70E-02		3.1E-06	NHL+liver	3E-08		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0008H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0008H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0008H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	7.67E-01	7.67E-01	1.00E+00	**8E-01**	**8E-01**	2.85E-01	4.90E-05		**1E-05**
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	1.07E+00	1.07E+00	2.00E+00	**5E-01**	**5E-01**	3.96E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.70E+01	Y	2.59E+01	2.59E+01	6.00E+01	**4E-01**	**4E-01**	9.62E+00	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	2.92E-01	2.92E-01	7.00E+00	**4E-02**	**4E-02**	1.09E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	8.84E+00	Y	8.48E+00	8.48E+00	6.00E+01	**1E-01**	**1E-01**	3.15E+00	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	4.32E-01	4.32E-01	8.00E+02	**5E-04**	**5E-04**	1.61E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	3.51E+01	Y	3.37E+01	3.37E+01	3.00E+01	**1E+00**	**1E+00**	1.25E+01	7.80E-06		**1E-04**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	3.66E-01	N	3.51E-01	3.51E-01	9.77E+01	**4E-03**	**4E-03**	1.30E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	2.10E+00	Y	2.01E+00	2.01E+00	7.00E+01	**3E-02**	**3E-02**	7.48E-01	-		---
ETHYLBENZENE	100-41-4	2.73E+01	Y	2.62E+01	2.62E+01	1.00E+03	**3E-02**	**3E-02**	9.74E+00	2.50E-06		**2E-05**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.22E+02	Y	1.17E+02	1.17E+02	1.00E+02	**1E+00**	**1E+00**	4.33E+01	-		---
METHYLENE CHLORIDE	75-09-2	8.00E-01	Y	7.67E-01	7.67E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**8E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	4.04E+01	Y	3.87E+01	3.87E+01	1.00E+02	**4E-01**	**4E-01**	1.44E+01	-		---
TETRACHLOROETHENE	127-18-4	2.91E+00	Y	2.79E+00	2.79E+00	4.00E+01	**7E-02**	**7E-02**	1.04E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	4.05E-01	N	3.88E-01	3.88E-01	2.00E+00	**2E-01**	**2E-01**	M	4.10E-06	M	**8E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	1.84E-01	1.84E-01	8.00E+01	**2E-03**	**2E-03**	M	4.40E-06	M	**8E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0008H**	**Total Inhalation**	**7E+00**	**7E+00**	**3E-04**
		ND risk contribution	**4E+00**	**4E+00**	**2E-04**
		Risk for Detects only	**3E+00**	**3E+00**	**1E-04**
		Site-related only	**3E-01**	**3E-01**	**2E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0008H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0008H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0008H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.00E-01	2.19E-01	1.32E-01	3.29E-01	1.10E-01	1.0E-08		2E-09	1E-09	3E-09	1E-09	**8E-09**
TRICHLOROETHENE	79-01-6	4.05E-01	1.11E-01	6.66E-02	1.66E-01	5.55E-02	1.0E-06	kidney	1E-07	7E-08	2E-07	6E-08	**4E-07**
TRICHLOROETHENE	79-01-6	4.05E-01	3.33E-02		1.11E-01		3.1E-06	NHL+liver	1E-07		3E-07		**4E-07**
VINYL CHLORIDE	75-01-4	1.92E-01	5.25E-02	3.15E-02	7.87E-02	2.62E-02	4.4E-06		2E-07	1E-07	3E-07	1E-07	**8E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0011H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	N	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0011H**	**Total Inhalation**	**3E-02**	**3E-02**	**1E-07**
		ND risk contribution	**3E-02**	**3E-02**	**1E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0011H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.40E-01	Y	1.34E-01	1.34E-01	2.00E+00	**7E-02**	**7E-02**	4.99E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	1.05E-01	1.05E-01	1.00E+00	**1E-01**	**1E-01**	3.92E-02	4.90E-05		**2E-06**
1,4-DIOXANE	123-91-1	1.70E-01	Y	1.63E-01	1.63E-01	3.00E+01	**5E-03**	**5E-03**	6.05E-02	5.00E-06		**3E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.45E+00	N	1.39E+00	1.39E+00	2.00E+00	**7E-01**	**7E-01**	5.16E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.60E-01	Y	3.45E-01	3.45E-01	6.00E+01	**6E-03**	**6E-03**	1.28E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	1.20E-01	Y	1.15E-01	1.15E-01	7.00E+00	**2E-02**	**2E-02**	4.27E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	3.55E-01	3.55E-01	6.00E+01	**6E-03**	**6E-03**	1.32E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	4.32E-01	4.32E-01	8.00E+02	**5E-04**	**5E-04**	1.61E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	8.60E-01	Y	8.25E-01	8.25E-01	3.00E+01	**3E-02**	**3E-02**	3.06E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	3.70E-01	N	3.55E-01	3.55E-01	5.00E+00	**7E-02**	**7E-02**	1.32E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	4.41E-01	4.41E-01	1.00E+02	**4E-03**	**4E-03**	1.64E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	5.50E-01	Y	5.27E-01	5.27E-01	9.77E+01	**5E-03**	**5E-03**	1.96E-01	2.30E-05		**5E-06**
ETHYL ACETATE	141-78-6	1.62E+00	Y	1.55E+00	1.55E+00	7.00E+01	**2E-02**	**2E-02**	5.77E-01	-		---
ETHYLBENZENE	100-41-4	4.70E-01	Y	4.51E-01	4.51E-01	1.00E+03	**5E-04**	**5E-04**	1.67E-01	2.50E-06		**4E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.95E+00	N	1.87E+00	1.87E+00	NA	---	---	6.95E-01	2.20E-05		**2E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	5.90E+00	Y	5.66E+00	5.66E+00	2.00E+02	**3E-02**	**3E-02**	2.10E+00	-		---
M,P-XYLENE	108-38-3	1.20E+00	Y	1.15E+00	1.15E+00	1.00E+02	**1E-02**	**1E-02**	4.27E-01	-		---
METHYLENE CHLORIDE	75-09-2	3.82E+00	Y	3.66E+00	3.66E+00	6.00E+02	**6E-03**	**6E-03**	M	1.00E-08	M	**4E-08**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	4.50E-01	Y	4.32E-01	4.32E-01	1.00E+02	**4E-03**	**4E-03**	1.60E-01	-		---
TETRACHLOROETHENE	127-18-4	1.90E+01	Y	1.82E+01	1.82E+01	4.00E+01	**5E-01**	**5E-01**	6.77E+00	2.60E-07		**2E-06**
TRICHLOROETHENE	79-01-6	1.35E-01	N	1.29E-01	1.29E-01	2.00E+00	**6E-02**	**6E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0011H**	**Total Inhalation**	**4E+00**	**4E+00**	**2E-04**
		ND risk contribution	**3E+00**	**3E+00**	**2E-04**
		Risk for Detects only	**7E-01**	**7E-01**	**1E-05**
		Site-related only	**5E-01**	**5E-01**	**3E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0011H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	6.50E-02	Y	6.23E-02	6.23E-02	7.00E+00	**9E-03**	**9E-03**	2.32E-02	2.60E-05		**6E-07**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	1.10E-02	N	1.05E-02	1.05E-02	8.00E+02	**1E-05**	**1E-05**	3.92E-03	1.10E-05		**4E-08**
BENZENE	71-43-2	5.30E-01	Y	5.08E-01	5.08E-01	3.00E+01	**2E-02**	**2E-02**	1.89E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.00E-01	Y	2.88E-01	2.88E-01	1.00E+02	**3E-03**	**3E-03**	1.07E-01	6.00E-06		**6E-07**
CHLOROFORM	67-66-3	2.20E-01	Y	2.11E-01	2.11E-01	9.77E+01	**2E-03**	**2E-03**	7.84E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	1.20E+00	Y	1.15E+00	1.15E+00	7.00E+01	**2E-02**	**2E-02**	4.27E-01	-		---
ETHYLBENZENE	100-41-4	2.60E-01	Y	2.49E-01	2.49E-01	1.00E+03	**2E-04**	**2E-04**	9.26E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	7.40E-01	Y	7.10E-01	7.10E-01	1.00E+02	**7E-03**	**7E-03**	2.64E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	4.65E-02	N	4.46E-02	4.46E-02	3.00E+00	**1E-02**	**1E-02**	1.66E-02	3.40E-05		**6E-07**
O-XYLENE	95-47-6	2.50E-01	Y	2.40E-01	2.40E-01	1.00E+02	**2E-03**	**2E-03**	8.90E-02	-		---
TETRACHLOROETHENE	127-18-4	1.60E+01	Y	1.53E+01	1.53E+01	4.00E+01	**4E-01**	**4E-01**	5.70E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	5.80E-02	Y	5.56E-02	5.56E-02	2.00E+00	**3E-02**	**3E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0011H**	**Total Inhalation**	**5E-01**	**5E-01**	**7E-06**
		Based on NDs only	**1E-02**	**1E-02**	**6E-07**
		Based on Detects only	**5E-01**	**5E-01**	**6E-06**
		Site-related only	**4E-01**	**4E-01**	**2E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0011H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.82E+00	1.05E+00	6.28E-01	1.57E+00	5.23E-01	1.0E-08		1E-08	6E-09	2E-08	5E-09	**4E-08**
TRICHLOROETHENE	79-01-6	1.35E-01	3.70E-02	2.22E-02	5.55E-02	1.85E-02	1.0E-06	kidney	4E-08	2E-08	6E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.35E-01	1.11E-02		3.70E-02		3.1E-06	NHL+liver	3E-08		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.80E-02	1.59E-02	9.53E-03	2.38E-02	7.95E-03	1.0E-06	kidney	2E-08	1E-08	2E-08	8E-09	**6E-08**
TRICHLOROETHENE	79-01-6	5.80E-02	4.77E-03		1.59E-02		3.1E-06	NHL+liver	1E-08		5E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0012H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	2.58E+00	Y	2.47E+00	2.47E+00	4.00E+01	**6E-02**	**6E-02**	9.19E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0012H**	**Total Inhalation**	**2E-01**	**2E-01**	**8E-07**
		ND risk contribution	**1E-01**	**1E-01**	**5E-07**
		Risk for Detects only	**6E-02**	**6E-02**	**2E-07**
		Site-related only	**2E-01**	**2E-01**	**8E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0012H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
1,4-DIOXANE	123-91-1	9.00E-02	N	8.63E-02	8.63E-02	3.00E+01	**3E-03**	**3E-03**	3.21E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	2.92E-01	2.92E-01	7.00E+00	**4E-02**	**4E-02**	1.09E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	8.64E-01	8.64E-01	8.00E+02	**1E-03**	**1E-03**	3.21E-01	1.10E-05		**4E-06**
BENZENE	71-43-2	6.39E-01	Y	6.12E-01	6.12E-01	3.00E+01	**2E-02**	**2E-02**	2.27E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.51E+00	Y	1.45E+00	1.45E+00	9.77E+01	**1E-02**	**1E-02**	5.39E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	6.48E+00	Y	6.22E+00	6.22E+00	7.00E+01	**9E-02**	**9E-02**	2.31E+00	-		**---**
ETHYLBENZENE	100-41-4	1.13E+00	Y	1.08E+00	1.08E+00	1.00E+03	**1E-03**	**1E-03**	4.02E-01	2.50E-06		**1E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	**---**	**---**	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	3.73E+00	Y	3.58E+00	3.58E+00	1.00E+02	**4E-02**	**4E-02**	1.33E+00	-		**---**
METHYLENE CHLORIDE	75-09-2	1.11E+00	Y	1.07E+00	1.07E+00	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**1E-08**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	9.98E-01	Y	9.57E-01	9.57E-01	1.00E+02	**1E-02**	**1E-02**	3.55E-01	-		**---**
TETRACHLOROETHENE	127-18-4	2.30E+00	Y	2.21E+00	2.21E+00	4.00E+01	**6E-02**	**6E-02**	8.21E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	1.35E-01	N	1.29E-01	1.29E-01	2.00E+00	**6E-02**	**6E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	3.37E-01	3.37E-01	2.00E+02	**2E-03**	**2E-03**	1.25E-01	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0012H**	**Total Inhalation**	**4E+00**	**4E+00**	**2E-04**
		ND risk contribution	**4E+00**	**4E+00**	**2E-04**
		Risk for Detects only	**2E-01**	**2E-01**	**2E-05**
		Site-related only	**1E-01**	**1E-01**	**9E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0012H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0012H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0012H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.11E+00	3.04E-01	1.83E-01	4.57E-01	1.52E-01	1.0E-08		3E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.35E-01	3.70E-02	2.22E-02	5.55E-02	1.85E-02	1.0E-06	kidney	4E-08	2E-08	6E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.35E-01	1.11E-02		3.70E-02		3.1E-06	NHL+liver	3E-08		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0013H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	3.36E-01	3.36E-01	4.00E+01	**8E-03**	**8E-03**	1.25E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0013H**	**Total Inhalation**	**1E-01**	**1E-01**	**6E-07**
		ND risk contribution	**1E-01**	**1E-01**	**6E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**1E-01**	**1E-01**	**6E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0013H**

Pathway:
Inhalation of Indoor Air (SUMMA)

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
1,4-DIOXANE	123-91-1	9.50E-02	N	9.11E-02	9.11E-02	3.00E+01	**3E-03**	**3E-03**	3.38E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	1.30E-01	Y	1.25E-01	1.25E-01	7.00E+00	**2E-02**	**2E-02**	4.63E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	8.64E-01	8.64E-01	8.00E+02	**1E-03**	**1E-03**	3.21E-01	1.10E-05		**4E-06**
BENZENE	71-43-2	6.20E-01	Y	5.95E-01	5.95E-01	3.00E+01	**2E-02**	**2E-02**	2.21E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	6.50E-01	N	6.23E-01	6.23E-01	5.00E+00	**1E-01**	**1E-01**	2.32E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	4.03E-01	4.03E-01	1.00E+02	**4E-03**	**4E-03**	1.50E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	3.50E-01	Y	3.36E-01	3.36E-01	9.77E+01	**3E-03**	**3E-03**	1.25E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	5.50E-01	N	5.27E-01	5.27E-01	7.00E+01	**8E-03**	**8E-03**	1.96E-01	-		---
ETHYLBENZENE	100-41-4	1.80E-01	Y	1.73E-01	1.73E-01	1.00E+03	**2E-04**	**2E-04**	6.41E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	2.10E+01	Y	2.01E+01	2.01E+01	2.00E+02	**1E-01**	**1E-01**	7.48E+00	-		---
M,P-XYLENE	108-38-3	1.52E+00	Y	1.46E+00	1.46E+00	1.00E+02	**1E-02**	**1E-02**	5.41E-01	-		---
METHYLENE CHLORIDE	75-09-2	2.40E+00	Y	2.30E+00	2.30E+00	6.00E+02	**4E-03**	**4E-03**	M	1.00E-08	M	**2E-08**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.40E-01	Y	1.34E-01	1.34E-01	1.00E+02	**1E-03**	**1E-03**	4.99E-02	-		---
TETRACHLOROETHENE	127-18-4	7.00E-02	Y	6.71E-02	6.71E-02	4.00E+01	**2E-03**	**2E-03**	2.49E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	1.35E-01	N	1.29E-01	1.29E-01	2.00E+00	**6E-02**	**6E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	3.00E+00	Y	2.88E+00	2.88E+00	2.00E+02	**1E-02**	**1E-02**	1.07E+00	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0013H**	**Total Inhalation**	**4E+00**	**4E+00**	**2E-04**
		ND risk contribution	**4E+00**	**4E+00**	**2E-04**
		Risk for Detects only	**2E-01**	**2E-01**	**7E-06**
		Site-related only	**7E-02**	**7E-02**	**7E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0013H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0013H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0013H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.40E+00	6.58E-01	3.95E-01	9.86E-01	3.29E-01	1.0E-08		7E-09	4E-09	1E-08	3E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.35E-01	3.70E-02	2.22E-02	5.55E-02	1.85E-02	1.0E-06	kidney	4E-08	2E-08	6E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.35E-01	1.11E-02		3.70E-02		3.1E-06	NHL+liver	3E-08		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0017H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0017H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0017H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	9.00E-02	N	8.63E-02	8.63E-02	3.00E+01	**3E-03**	**3E-03**	3.21E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	9.83E-01	Y	9.42E-01	9.42E-01	6.00E+01	**2E-02**	**2E-02**	3.50E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	2.92E-01	2.92E-01	7.00E+00	**4E-02**	**4E-02**	1.09E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	3.55E-01	3.55E-01	6.00E+01	**6E-03**	**6E-03**	1.32E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	4.32E-01	4.32E-01	8.00E+02	**5E-04**	**5E-04**	1.61E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	8.00E-01	Y	7.67E-01	7.67E-01	3.00E+01	**3E-02**	**3E-02**	2.85E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.61E+00	Y	1.54E+00	1.54E+00	9.77E+01	**2E-02**	**2E-02**	5.74E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	3.30E+00	Y	3.16E+00	3.16E+00	7.00E+01	**5E-02**	**5E-02**	1.18E+00	-		**---**
ETHYLBENZENE	100-41-4	3.25E-01	N	3.12E-01	3.12E-01	1.00E+03	**3E-04**	**3E-04**	1.16E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.04E+00	Y	1.96E+00	1.96E+00	1.00E+02	**2E-02**	**2E-02**	7.27E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	8.33E-01	Y	7.99E-01	7.99E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**8E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	3.25E-01	N	3.12E-01	3.12E-01	1.00E+02	**3E-03**	**3E-03**	1.16E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.02E+01	Y	9.75E+00	9.75E+00	4.00E+01	**2E-01**	**2E-01**	3.62E+00	2.60E-07		**9E-07**
TRICHLOROETHENE	79-01-6	3.92E-01	Y	3.76E-01	3.76E-01	2.00E+00	**2E-01**	**2E-01**	M	4.10E-06	M	**8E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0017H**	**Total Inhalation**	**3E+00**	**3E+00**	**2E-04**
		ND risk contribution	**2E+00**	**2E+00**	**2E-04**
		Risk for Detects only	**6E-01**	**6E-01**	**2E-05**
		Site-related only	**4E-01**	**4E-01**	**2E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0017H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0017H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0017H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.33E-01	2.28E-01	1.37E-01	3.42E-01	1.14E-01	1.0E-08		2E-09	1E-09	3E-09	1E-09	**8E-09**
TRICHLOROETHENE	79-01-6	3.92E-01	1.07E-01	6.44E-02	1.61E-01	5.37E-02	1.0E-06	kidney	1E-07	6E-08	2E-07	5E-08	**4E-07**
TRICHLOROETHENE	79-01-6	3.92E-01	3.22E-02		1.07E-01		3.1E-06	NHL+liver	1E-07		3E-07		**4E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0018H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.30E+00	Y	3.16E+00	3.16E+00	4.00E+01	**8E-02**	**8E-02**	1.18E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0018H**	**Total Inhalation**	**1E-01**	**1E-01**	**4E-07**
		ND risk contribution	**2E-02**	**2E-02**	**1E-07**
		Risk for Detects only	**8E-02**	**8E-02**	**3E-07**
		Site-related only	**1E-01**	**1E-01**	**4E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0018H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-01	Y	2.30E-01	2.30E-01	NA	---	---	8.55E-02	5.80E-05		**5E-06**
1,3-BUTADIENE	106-99-0	4.30E-01	Y	4.12E-01	4.12E-01	2.00E+00	**2E-01**	**2E-01**	1.53E-01	3.00E-05		**5E-06**
BENZYL CHLORIDE	100-44-7	8.40E-01	Y	8.05E-01	8.05E-01	1.00E+00	**8E-01**	**8E-01**	2.99E-01	4.90E-05		**1E-05**
1,4-DIOXANE	123-91-1	4.90E-01	Y	4.70E-01	4.70E-01	3.00E+01	**2E-02**	**2E-02**	1.75E-01	5.00E-06		**9E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	4.60E+00	Y	4.41E+00	4.41E+00	2.00E+00	**2E+00**	**2E+00**	1.64E+00	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.80E+00	Y	2.68E+00	2.68E+00	6.00E+01	**4E-02**	**4E-02**	9.97E-01	-		---
1,2-DIBROMOETHANE	106-93-4	9.40E-02	Y	9.01E-02	9.01E-02	9.00E+00	**1E-02**	**1E-02**	3.35E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.30E+00	Y	1.25E+00	1.25E+00	7.00E+00	**2E-01**	**2E-01**	4.63E-01	2.60E-05		**1E-05**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	9.00E-01	Y	8.63E-01	8.63E-01	6.00E+01	**1E-02**	**1E-02**	3.21E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	4.60E-01	Y	4.41E-01	4.41E-01	8.00E+02	**6E-04**	**6E-04**	1.64E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	5.60E+00	Y	5.37E+00	5.37E+00	3.00E+01	**2E-01**	**2E-01**	1.99E+00	7.80E-06		**2E-05**
BROMODICHLOROMETHANE	75-27-4	4.50E-01	Y	4.32E-01	4.32E-01	NA	---	---	1.60E-01	3.70E-05		**6E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	6.71E-01	6.71E-01	5.00E+00	**1E-01**	**1E-01**	2.49E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	4.41E-01	4.41E-01	1.00E+02	**4E-03**	**4E-03**	1.64E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	2.40E+00	Y	2.30E+00	2.30E+00	9.77E+01	**2E-02**	**2E-02**	8.55E-01	2.30E-05		**2E-05**
ETHYL ACETATE	141-78-6	4.68E+00	Y	4.49E+00	4.49E+00	7.00E+01	**6E-02**	**6E-02**	1.67E+00	-		---
ETHYLBENZENE	100-41-4	2.40E+00	Y	2.30E+00	2.30E+00	1.00E+03	**2E-03**	**2E-03**	8.55E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	5.30E+00	Y	5.08E+00	5.08E+00	NA	---	---	1.89E+00	2.20E-05		**4E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.30E+02	Y	1.25E+02	1.25E+02	2.00E+02	**6E-01**	**6E-01**	4.63E+01	-		---
M,P-XYLENE	108-38-3	1.00E+01	Y	9.59E+00	9.59E+00	1.00E+02	**1E-01**	**1E-01**	3.56E+00	-		---
METHYLENE CHLORIDE	75-09-2	1.70E+00	Y	1.63E+00	1.63E+00	6.00E+02	**3E-03**	**3E-03**	M	1.00E-08	M	**2E-08**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.20E+00	Y	3.07E+00	3.07E+00	1.00E+02	**3E-02**	**3E-02**	1.14E+00	-		---
TETRACHLOROETHENE	127-18-4	1.40E+01	Y	1.34E+01	1.34E+01	4.00E+01	**3E-01**	**3E-01**	4.99E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	8.30E-01	Y	7.96E-01	7.96E-01	2.00E+00	**4E-01**	**4E-01**	M	4.10E-06	M	**2E-06**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0018H**	**Total Inhalation**	**7E+00**	**7E+00**	**2E-04**
		ND risk contribution	**2E+00**	**2E+00**	**3E-06**
		Risk for Detects only	**5E+00**	**5E+00**	**1E-04**
		Site-related only	**8E-01**	**8E-01**	**4E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0018H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	6.90E-01	Y	6.62E-01	6.62E-01	7.00E+00	**9E-02**	**9E-02**	2.46E-01	2.60E-05		**6E-06**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	1.70E-02	N	1.63E-02	1.63E-02	8.00E+02	**2E-05**	**2E-05**	6.05E-03	1.10E-05		**7E-08**
BENZENE	71-43-2	3.40E+00	Y	3.26E+00	3.26E+00	3.00E+01	**1E-01**	**1E-01**	1.21E+00	7.80E-06		**9E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	3.64E-01	3.64E-01	1.00E+02	**4E-03**	**4E-03**	1.35E-01	6.00E-06		**8E-07**
CHLOROFORM	67-66-3	8.30E-01	Y	7.96E-01	7.96E-01	9.77E+01	**8E-03**	**8E-03**	2.96E-01	2.30E-05		**7E-06**
ETHYL ACETATE	141-78-6	4.00E+00	Y	3.84E+00	3.84E+00	7.00E+01	**5E-02**	**5E-02**	1.42E+00	-		---
ETHYLBENZENE	100-41-4	1.90E+00	Y	1.82E+00	1.82E+00	1.00E+03	**2E-03**	**2E-03**	6.77E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	7.60E+00	Y	7.29E+00	7.29E+00	1.00E+02	**7E-02**	**7E-02**	2.71E+00	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	8.30E+00	Y	7.96E+00	7.96E+00	3.00E+00	**3E+00**	**3E+00**	2.96E+00	3.40E-05		**1E-04**
O-XYLENE	95-47-6	2.40E+00	Y	2.30E+00	2.30E+00	1.00E+02	**2E-02**	**2E-02**	8.55E-01	-		---
TETRACHLOROETHENE	127-18-4	1.20E+01	Y	1.15E+01	1.15E+01	4.00E+01	**3E-01**	**3E-01**	4.27E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	4.80E-01	Y	4.60E-01	4.60E-01	2.00E+00	**2E-01**	**2E-01**	M	4.10E-06	M	**1E-06**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0018H**	**Total Inhalation**	**4E+00**	**4E+00**	**1E-04**
		Based on NDs only	**2E-05**	**2E-05**	**7E-08**
		Based on Detects only	**4E+00**	**4E+00**	**1E-04**
		Site-related only	**5E-01**	**5E-01**	**2E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0018H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.70E+00	4.66E-01	2.79E-01	6.99E-01	2.33E-01	1.0E-08		5E-09	3E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	8.30E-01	2.27E-01	1.36E-01	3.41E-01	1.14E-01	1.0E-06	kidney	2E-07	1E-07	3E-07	1E-07	**8E-07**
TRICHLOROETHENE	79-01-6	8.30E-01	6.82E-02		2.27E-01		3.1E-06	NHL+liver	2E-07		7E-07		**9E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	4.80E-01	1.32E-01	7.89E-02	1.97E-01	6.58E-02	1.0E-06	kidney	1E-07	8E-08	2E-07	7E-08	**5E-07**
TRICHLOROETHENE	79-01-6	4.80E-01	3.95E-02		1.32E-01		3.1E-06	NHL+liver	1E-07		4E-07		**5E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0023H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0023H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0023H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	9.00E-02	N	8.63E-02	8.63E-02	3.00E+01	**3E-03**	**3E-03**	3.21E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	3.70E-01	N	3.55E-01	3.55E-01	6.00E+01	**6E-03**	**6E-03**	1.32E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	2.92E-01	2.92E-01	7.00E+00	**4E-02**	**4E-02**	1.09E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	3.55E-01	3.55E-01	6.00E+01	**6E-03**	**6E-03**	1.32E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	4.32E-01	4.32E-01	8.00E+02	**5E-04**	**5E-04**	1.61E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	1.40E+00	Y	1.34E+00	1.34E+00	3.00E+01	**4E-02**	**4E-02**	4.99E-01	7.80E-06		**4E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	3.66E-01	N	3.51E-01	3.51E-01	9.77E+01	**4E-03**	**4E-03**	1.30E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	2.70E-01	N	2.59E-01	2.59E-01	7.00E+01	**4E-03**	**4E-03**	9.62E-02	-		**---**
ETHYLBENZENE	100-41-4	3.25E-01	N	3.12E-01	3.12E-01	1.00E+03	**3E-04**	**3E-04**	1.16E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.30E+00	Y	2.21E+00	2.21E+00	1.00E+02	**2E-02**	**2E-02**	8.19E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	6.40E-01	Y	6.14E-01	6.14E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**6E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	6.94E-01	Y	6.66E-01	6.66E-01	1.00E+02	**7E-03**	**7E-03**	2.47E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.40E+00	Y	1.34E+00	1.34E+00	4.00E+01	**3E-02**	**3E-02**	4.99E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	1.35E-01	N	1.29E-01	1.29E-01	2.00E+00	**6E-02**	**6E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0023H**	**Total Inhalation**	**2E+00**	**2E+00**	**2E-04**
		ND risk contribution	**2E+00**	**2E+00**	**2E-04**
		Risk for Detects only	**1E-01**	**1E-01**	**4E-06**
		Site-related only	**1E-01**	**1E-01**	**9E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0023H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0023H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0023H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.40E-01	1.75E-01	1.05E-01	2.63E-01	8.77E-02	1.0E-08		2E-09	1E-09	3E-09	9E-10	**6E-09**
TRICHLOROETHENE	79-01-6	1.35E-01	3.70E-02	2.22E-02	5.55E-02	1.85E-02	1.0E-06	kidney	4E-08	2E-08	6E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.35E-01	1.11E-02		3.70E-02		3.1E-06	NHL+liver	3E-08		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0025H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	3.36E-01	3.36E-01	4.00E+01	**8E-03**	**8E-03**	1.25E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0025H**	**Total Inhalation**	**1E-01**	**1E-01**	**6E-07**
		ND risk contribution	**1E-01**	**1E-01**	**6E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**1E-01**	**1E-01**	**6E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0025H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
1,4-DIOXANE	123-91-1	2.34E+00	Y	2.24E+00	2.24E+00	3.00E+01	**7E-02**	**7E-02**	8.34E-01	5.00E-06		**4E-06**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.60E-01	Y	2.49E-01	2.49E-01	6.00E+01	**4E-03**	**4E-03**	9.26E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.30E-01	Y	3.16E-01	3.16E-01	7.00E+00	**5E-02**	**5E-02**	1.18E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	2.10E+00	Y	2.01E+00	2.01E+00	8.00E+02	**3E-03**	**3E-03**	7.48E-01	1.10E-05		**8E-06**
BENZENE	71-43-2	8.30E-01	Y	7.96E-01	7.96E-01	3.00E+01	**3E-02**	**3E-02**	2.96E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	7.67E-01	7.67E-01	5.00E+00	**2E-01**	**2E-01**	2.85E-01	-		---
CARBON TETRACHLORIDE	56-23-5	5.60E-01	Y	5.37E-01	5.37E-01	1.00E+02	**5E-03**	**5E-03**	1.99E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.90E+00	Y	1.82E+00	1.82E+00	9.77E+01	**2E-02**	**2E-02**	6.77E-01	2.30E-05		**2E-05**
ETHYL ACETATE	141-78-6	5.50E-01	N	5.27E-01	5.27E-01	7.00E+01	**8E-03**	**8E-03**	1.96E-01	-		---
ETHYLBENZENE	100-41-4	2.10E-01	Y	2.01E-01	2.01E-01	1.00E+03	**2E-04**	**2E-04**	7.48E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	7.70E+00	Y	7.38E+00	7.38E+00	2.00E+02	**4E-02**	**4E-02**	2.74E+00	-		---
M,P-XYLENE	108-38-3	1.30E+00	Y	1.25E+00	1.25E+00	1.00E+02	**1E-02**	**1E-02**	4.63E-01	-		---
METHYLENE CHLORIDE	75-09-2	3.33E+00	Y	3.20E+00	3.20E+00	6.00E+02	**5E-03**	**5E-03**	M	1.00E-08	M	**3E-08**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.10E-01	Y	2.97E-01	2.97E-01	1.00E+02	**3E-03**	**3E-03**	1.10E-01	-		---
TETRACHLOROETHENE	127-18-4	4.40E-01	Y	4.22E-01	4.22E-01	4.00E+01	**1E-02**	**1E-02**	1.57E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	1.35E-01	N	1.29E-01	1.29E-01	2.00E+00	**6E-02**	**6E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	3.37E-01	3.37E-01	2.00E+02	**2E-03**	**2E-03**	1.25E-01	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0025H**	**Total Inhalation**	**4E+00**	**4E+00**	**2E-04**
		ND risk contribution	**4E+00**	**4E+00**	**2E-04**
		Risk for Detects only	**2E-01**	**2E-01**	**3E-05**
		Site-related only	**2E-01**	**2E-01**	**5E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0025H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	1.60E-01	Y	1.53E-01	1.53E-01	7.00E+00	**2E-02**	**2E-02**	5.70E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	1.40E+00	Y	1.34E+00	1.34E+00	8.00E+02	**2E-03**	**2E-03**	4.99E-01	1.10E-05		**5E-06**
BENZENE	71-43-2	5.00E-01	Y	4.79E-01	4.79E-01	3.00E+01	**2E-02**	**2E-02**	1.78E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.10E-01	Y	2.97E-01	2.97E-01	1.00E+02	**3E-03**	**3E-03**	1.10E-01	6.00E-06		**7E-07**
CHLOROFORM	67-66-3	9.40E-01	Y	9.01E-01	9.01E-01	9.77E+01	**9E-03**	**9E-03**	3.35E-01	2.30E-05		**8E-06**
ETHYL ACETATE	141-78-6	3.90E+00	Y	3.74E+00	3.74E+00	7.00E+01	**5E-02**	**5E-02**	1.39E+00	-		---
ETHYLBENZENE	100-41-4	1.20E-01	Y	1.15E-01	1.15E-01	1.00E+03	**1E-04**	**1E-04**	4.27E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	4.20E-01	Y	4.03E-01	4.03E-01	1.00E+02	**4E-03**	**4E-03**	1.50E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	8.80E-02	Y	8.44E-02	8.44E-02	3.00E+00	**3E-02**	**3E-02**	3.13E-02	3.40E-05		**1E-06**
O-XYLENE	95-47-6	1.50E-01	Y	1.44E-01	1.44E-01	1.00E+02	**1E-03**	**1E-03**	5.34E-02	-		---
TETRACHLOROETHENE	127-18-4	3.20E-01	Y	3.07E-01	3.07E-01	4.00E+01	**8E-03**	**8E-03**	1.14E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	1.10E-02	N	1.05E-02	1.05E-02	2.00E+00	**5E-03**	**5E-03**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0025H**	**Total Inhalation**	**2E-01**	**2E-01**	**2E-05**
		Based on NDs only	**5E-03**	**5E-03**	**2E-08**
		Based on Detects only	**1E-01**	**1E-01**	**2E-05**
		Site-related only	**1E-02**	**1E-02**	**5E-08**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0025H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.33E+00	9.13E-01	5.48E-01	1.37E+00	4.57E-01	1.0E-08		9E-09	5E-09	1E-08	5E-09	**3E-08**
TRICHLOROETHENE	79-01-6	1.35E-01	3.70E-02	2.22E-02	5.55E-02	1.85E-02	1.0E-06	kidney	4E-08	2E-08	6E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.35E-01	1.11E-02		3.70E-02		3.1E-06	NHL+liver	3E-08		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.10E-02	3.01E-03	1.81E-03	4.52E-03	1.51E-03	1.0E-06	kidney	3E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.10E-02	9.04E-04		3.01E-03		3.1E-06	NHL+liver	3E-09		9E-09		**1E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0026H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.29E+00	Y	1.24E+00	1.24E+00	4.00E+01	**3E-02**	**3E-02**	4.59E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0026H**	**Total Inhalation**	**2E-01**	**2E-01**	**6E-07**
		ND risk contribution	**1E-01**	**1E-01**	**5E-07**
		Risk for Detects only	**3E-02**	**3E-02**	**1E-07**
		Site-related only	**2E-01**	**2E-01**	**6E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0026H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
1,4-DIOXANE	123-91-1	2.60E-01	Y	2.49E-01	2.49E-01	3.00E+01	**8E-03**	**8E-03**	9.26E-02	5.00E-06		**5E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.80E-01	Y	8.44E-01	8.44E-01	2.00E-01	**4E+00**	**4E+00**	3.13E-01	1.60E-05		**5E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E+00	Y	1.53E+00	1.53E+00	6.00E+01	**3E-02**	**3E-02**	5.70E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.00E+00	Y	2.88E+00	2.88E+00	7.00E+00	**4E-01**	**4E-01**	1.07E+00	2.60E-05		**3E-05**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	2.50E-01	Y	2.40E-01	2.40E-01	6.00E+01	**4E-03**	**4E-03**	8.90E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	8.40E-02	Y	8.05E-02	8.05E-02	8.00E+02	**1E-04**	**1E-04**	2.99E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	7.70E-01	Y	7.38E-01	7.38E-01	3.00E+01	**2E-02**	**2E-02**	2.74E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.10E-01	Y	5.85E-01	5.85E-01	NA	---	---	2.17E-01	3.70E-05		**8E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	7.67E-01	7.67E-01	5.00E+00	**2E-01**	**2E-01**	2.85E-01	-		---
CARBON TETRACHLORIDE	56-23-5	5.20E-01	Y	4.99E-01	4.99E-01	1.00E+02	**5E-03**	**5E-03**	1.85E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	2.60E+00	Y	2.49E+00	2.49E+00	9.77E+01	**3E-02**	**3E-02**	9.26E-01	2.30E-05		**2E-05**
ETHYL ACETATE	141-78-6	2.10E+00	Y	2.01E+00	2.01E+00	7.00E+01	**3E-02**	**3E-02**	7.48E-01	-		---
ETHYLBENZENE	100-41-4	2.30E+00	Y	2.21E+00	2.21E+00	1.00E+03	**2E-03**	**2E-03**	8.19E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	2.90E+01	Y	2.78E+01	2.78E+01	2.00E+02	**1E-01**	**1E-01**	1.03E+01	-		---
M,P-XYLENE	108-38-3	9.12E+00	Y	8.75E+00	8.75E+00	1.00E+02	**9E-02**	**9E-02**	3.25E+00	-		---
METHYLENE CHLORIDE	75-09-2	2.22E+00	Y	2.13E+00	2.13E+00	6.00E+02	**4E-03**	**4E-03**	M	1.00E-08	M	**2E-08**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	2.10E+00	Y	2.01E+00	2.01E+00	1.00E+02	**2E-02**	**2E-02**	7.48E-01	-		---
TETRACHLOROETHENE	127-18-4	1.20E+01	Y	1.15E+01	1.15E+01	4.00E+01	**3E-01**	**3E-01**	4.27E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	2.50E-01	Y	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	3.37E-01	3.37E-01	2.00E+02	**2E-03**	**2E-03**	1.25E-01	-		---
VINYL CHLORIDE	75-01-4	1.60E-02	Y	1.53E-02	1.53E-02	8.00E+01	**2E-04**	**2E-04**	M	4.40E-06	M	**7E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0026H**	**Total Inhalation**	**7E+00**	**7E+00**	**2E-04**
		ND risk contribution	**2E+00**	**2E+00**	**2E-04**
		Risk for Detects only	**5E+00**	**5E+00**	**7E-05**
		Site-related only	**4E-01**	**4E-01**	**2E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0026H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	1.20E+00	Y	1.15E+00	1.15E+00	7.00E+00	**2E-01**	**2E-01**	4.27E-01	2.60E-05		**1E-05**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	3.80E-02	Y	3.64E-02	3.64E-02	8.00E+02	**5E-05**	**5E-05**	1.35E-02	1.10E-05		**1E-07**
BENZENE	71-43-2	4.70E-01	Y	4.51E-01	4.51E-01	3.00E+01	**2E-02**	**2E-02**	1.67E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.10E-01	Y	2.97E-01	2.97E-01	1.00E+02	**3E-03**	**3E-03**	1.10E-01	6.00E-06		**7E-07**
CHLOROFORM	67-66-3	1.80E+00	Y	1.73E+00	1.73E+00	9.77E+01	**2E-02**	**2E-02**	6.41E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	5.10E+00	Y	4.89E+00	4.89E+00	7.00E+01	**7E-02**	**7E-02**	1.82E+00	-		---
ETHYLBENZENE	100-41-4	7.40E-01	Y	7.10E-01	7.10E-01	1.00E+03	**7E-04**	**7E-04**	2.64E-01	2.50E-06		**7E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	2.60E+00	Y	2.49E+00	2.49E+00	1.00E+02	**2E-02**	**2E-02**	9.26E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	3.00E-02	N	2.88E-02	2.88E-02	3.00E+00	**1E-02**	**1E-02**	1.07E-02	3.40E-05		**4E-07**
O-XYLENE	95-47-6	7.00E-01	Y	6.71E-01	6.71E-01	1.00E+02	**7E-03**	**7E-03**	2.49E-01	-		---
TETRACHLOROETHENE	127-18-4	9.50E+00	Y	9.11E+00	9.11E+00	4.00E+01	**2E-01**	**2E-01**	3.38E+00	2.60E-07		**9E-07**
TRICHLOROETHENE	79-01-6	9.30E-02	Y	8.92E-02	8.92E-02	2.00E+00	**4E-02**	**4E-02**	M	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0026H**	**Total Inhalation**	**6E-01**	**6E-01**	**3E-05**
		Based on NDs only	**1E-02**	**1E-02**	**4E-07**
		Based on Detects only	**6E-01**	**6E-01**	**3E-05**
		Site-related only	**3E-01**	**3E-01**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0026H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.22E+00	6.09E-01	3.65E-01	9.13E-01	3.04E-01	1.0E-08		6E-09	4E-09	9E-09	3E-09	**2E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	1.60E-02	4.38E-03	2.63E-03	6.58E-03	2.19E-03	4.4E-06		2E-08	1E-08	3E-08	1E-08	**7E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.30E-02	2.55E-02	1.53E-02	3.82E-02	1.27E-02	1.0E-06	kidney	3E-08	2E-08	4E-08	1E-08	**9E-08**
TRICHLOROETHENE	79-01-6	9.30E-02	7.64E-03		2.55E-02		3.1E-06	NHL+liver	2E-08		8E-08		**1E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0027H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	3.36E-01	3.36E-01	4.00E+01	**8E-03**	**8E-03**	1.25E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0027H**	**Total Inhalation**	**1E-01**	**1E-01**	**6E-07**
		ND risk contribution	**1E-01**	**1E-01**	**6E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**1E-01**	**1E-01**	**6E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0027H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
1,4-DIOXANE	123-91-1	9.00E-02	N	8.63E-02	8.63E-02	3.00E+01	**3E-03**	**3E-03**	3.21E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.30E+00	Y	3.16E+00	3.16E+00	7.00E+00	**5E-01**	**5E-01**	1.18E+00	2.60E-05		**3E-05**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	4.03E+00	Y	3.86E+00	3.86E+00	8.00E+02	**5E-03**	**5E-03**	1.43E+00	1.10E-05		**2E-05**
BENZENE	71-43-2	7.34E-01	Y	7.04E-01	7.04E-01	3.00E+01	**2E-02**	**2E-02**	2.62E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	3.66E-01	N	3.51E-01	3.51E-01	9.77E+01	**4E-03**	**4E-03**	1.30E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	1.10E+00	Y	1.05E+00	1.05E+00	7.00E+01	**2E-02**	**2E-02**	3.92E-01	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	3.12E-01	3.12E-01	1.00E+03	**3E-04**	**3E-04**	1.16E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.35E+00	Y	1.29E+00	1.29E+00	1.00E+02	**1E-02**	**1E-02**	4.81E-01	-		---
METHYLENE CHLORIDE	75-09-2	1.25E+00	Y	1.20E+00	1.20E+00	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**1E-08**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	3.12E-01	3.12E-01	1.00E+02	**3E-03**	**3E-03**	1.16E-01	-		---
TETRACHLOROETHENE	127-18-4	1.70E-01	N	1.63E-01	1.63E-01	4.00E+01	**4E-03**	**4E-03**	6.05E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	1.35E-01	N	1.29E-01	1.29E-01	2.00E+00	**6E-02**	**6E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	3.37E-01	3.37E-01	2.00E+02	**2E-03**	**2E-03**	1.25E-01	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0027H**	**Total Inhalation**	**5E+00**	**5E+00**	**2E-04**
		ND risk contribution	**4E+00**	**4E+00**	**2E-04**
		Risk for Detects only	**5E-01**	**5E-01**	**5E-05**
		Site-related only	**7E-02**	**7E-02**	**7E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0027H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0027H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0027H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.25E+00	3.42E-01	2.05E-01	5.14E-01	1.71E-01	1.0E-08		3E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.35E-01	3.70E-02	2.22E-02	5.55E-02	1.85E-02	1.0E-06	kidney	4E-08	2E-08	6E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.35E-01	1.11E-02		3.70E-02		3.1E-06	NHL+liver	3E-08		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0029H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	6.58E+00	Y	6.31E+00	6.31E+00	4.00E+01	**2E-01**	**2E-01**	2.34E+00	2.60E-07		**6E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0029H**	**Total Inhalation**	**3E-01**	**3E-01**	**1E-06**
		ND risk contribution	**1E-01**	**1E-01**	**5E-07**
		Risk for Detects only	**2E-01**	**2E-01**	**6E-07**
		Site-related only	**3E-01**	**3E-01**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0029H**

Pathway:
Inhalation of Indoor Air (SUMMA)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
1,4-DIOXANE	123-91-1	2.80E-01	Y	2.68E-01	2.68E-01	3.00E+01	**9E-03**	**9E-03**	9.97E-02	5.00E-06		**5E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E-01	Y	1.53E-01	1.53E-01	6.00E+01	**3E-03**	**3E-03**	5.70E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	7.90E-02	Y	7.58E-02	7.58E-02	7.00E+00	**1E-02**	**1E-02**	2.81E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	8.64E-01	8.64E-01	8.00E+02	**1E-03**	**1E-03**	3.21E-01	1.10E-05		**4E-06**
BENZENE	71-43-2	1.31E+00	Y	1.26E+00	1.26E+00	3.00E+01	**4E-02**	**4E-02**	4.66E-01	7.80E-06		**4E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	6.71E-01	6.71E-01	5.00E+00	**1E-01**	**1E-01**	2.49E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	3.84E-01	3.84E-01	1.00E+02	**4E-03**	**4E-03**	1.42E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	1.00E+00	Y	9.59E-01	9.59E-01	9.77E+01	**1E-02**	**1E-02**	3.56E-01	2.30E-05		**8E-06**
ETHYL ACETATE	141-78-6	5.50E-01	N	5.27E-01	5.27E-01	7.00E+01	**8E-03**	**8E-03**	1.96E-01	-		---
ETHYLBENZENE	100-41-4	1.80E-01	Y	1.73E-01	1.73E-01	1.00E+03	**2E-04**	**2E-04**	6.41E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.70E+01	Y	1.63E+01	1.63E+01	2.00E+02	**8E-02**	**8E-02**	6.05E+00	-		---
M,P-XYLENE	108-38-3	2.21E+00	Y	2.12E+00	2.12E+00	1.00E+02	**2E-02**	**2E-02**	7.87E-01	-		---
METHYLENE CHLORIDE	75-09-2	1.91E+01	Y	1.83E+01	1.83E+01	6.00E+02	**3E-02**	**3E-02**	M	1.00E-08	M	**2E-07**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.80E-01	Y	1.73E-01	1.73E-01	1.00E+02	**2E-03**	**2E-03**	6.41E-02	-		---
TETRACHLOROETHENE	127-18-4	2.00E+00	Y	1.92E+00	1.92E+00	4.00E+01	**5E-02**	**5E-02**	7.12E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	3.70E-02	Y	3.55E-02	3.55E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	3.52E-01	N	3.37E-01	3.37E-01	2.00E+02	**2E-03**	**2E-03**	1.25E-01	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0029H**	**Total Inhalation**	**4E+00**	**4E+00**	**2E-04**
		ND risk contribution	**4E+00**	**4E+00**	**2E-04**
		Risk for Detects only	**3E-01**	**3E-01**	**1E-05**
		Site-related only	**8E-02**	**8E-02**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0029H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0029H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0029H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.91E+01	5.23E+00	3.14E+00	7.85E+00	2.62E+00	1.0E-08		5E-08	3E-08	8E-08	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	3.70E-02	1.01E-02	6.08E-03	1.52E-02	5.07E-03	1.0E-06	kidney	1E-08	6E-09	2E-08	5E-09	**4E-08**
TRICHLOROETHENE	79-01-6	3.70E-02	3.04E-03		1.01E-02		3.1E-06	NHL+liver	9E-09		3E-08		**4E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0030H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0030H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0030H**

Pathway:
Inhalation of Indoor Air (SUMMA)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	7.67E-01	7.67E-01	1.00E+00	**8E-01**	**8E-01**	2.85E-01	4.90E-05		**1E-05**
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	1.07E+00	1.07E+00	2.00E+00	**5E-01**	**5E-01**	3.96E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.21E+00	Y	2.12E+00	2.12E+00	6.00E+01	**4E-02**	**4E-02**	7.87E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	9.30E-01	Y	8.92E-01	8.92E-01	7.00E+00	**1E-01**	**1E-01**	3.31E-01	2.60E-05		**9E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	9.00E-01	Y	8.63E-01	8.63E-01	6.00E+01	**1E-02**	**1E-02**	3.21E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	4.32E-01	4.32E-01	8.00E+02	**5E-04**	**5E-04**	1.61E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	1.12E+00	Y	1.07E+00	1.07E+00	3.00E+01	**4E-02**	**4E-02**	3.98E-01	7.80E-06		**3E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	3.66E-01	N	3.51E-01	3.51E-01	9.77E+01	**4E-03**	**4E-03**	1.30E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	3.70E+00	Y	3.55E+00	3.55E+00	7.00E+01	**5E-02**	**5E-02**	1.32E+00	-		---
ETHYLBENZENE	100-41-4	1.13E+00	Y	1.08E+00	1.08E+00	1.00E+03	**1E-03**	**1E-03**	4.02E-01	2.50E-06		**1E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	4.80E+00	Y	4.60E+00	4.60E+00	1.00E+02	**5E-02**	**5E-02**	1.71E+00	-		---
METHYLENE CHLORIDE	75-09-2	1.11E+00	Y	1.07E+00	1.07E+00	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**1E-08**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.60E+00	Y	1.53E+00	1.53E+00	1.00E+02	**2E-02**	**2E-02**	5.70E-01	-		---
TETRACHLOROETHENE	127-18-4	5.90E+00	Y	5.66E+00	5.66E+00	4.00E+01	**1E-01**	**1E-01**	2.10E+00	2.60E-07		**5E-07**
TRICHLOROETHENE	79-01-6	4.05E-01	N	3.88E-01	3.88E-01	2.00E+00	**2E-01**	**2E-01**	M	4.10E-06	M	**8E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	1.84E-01	1.84E-01	8.00E+01	**2E-03**	**2E-03**	M	4.40E-06	M	**8E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0030H**	**Total Inhalation**	**4E+00**	**4E+00**	**2E-04**
		ND risk contribution	**4E+00**	**4E+00**	**2E-04**
		Risk for Detects only	**5E-01**	**5E-01**	**1E-05**
		Site-related only	**3E-01**	**3E-01**	**2E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0030H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0030H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0030H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.11E+00	3.04E-01	1.83E-01	4.57E-01	1.52E-01	1.0E-08		3E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	1.11E-01	6.66E-02	1.66E-01	5.55E-02	1.0E-06	kidney	1E-07	7E-08	2E-07	6E-08	**4E-07**
TRICHLOROETHENE	79-01-6	4.05E-01	3.33E-02		1.11E-01		3.1E-06	NHL+liver	1E-07		3E-07		**4E-07**
VINYL CHLORIDE	75-01-4	1.92E-01	5.25E-02	3.15E-02	7.87E-02	2.62E-02	4.4E-06		2E-07	1E-07	3E-07	1E-07	**8E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0036H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0036H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0036H**

Pathway:
Inhalation of Indoor Air (SUMMA)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
BENZYL CHLORIDE	100-44-7	8.00E-01	N	7.67E-01	7.67E-01	1.00E+00	**8E-01**	**8E-01**	2.85E-01	4.90E-05		**1E-05**
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.11E+00	N	1.07E+00	1.07E+00	2.00E+00	**5E-01**	**5E-01**	3.96E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	3.70E-01	N	3.55E-01	3.55E-01	6.00E+01	**6E-03**	**6E-03**	1.32E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	2.92E-01	2.92E-01	7.00E+00	**4E-02**	**4E-02**	1.09E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	3.55E-01	3.55E-01	6.00E+01	**6E-03**	**6E-03**	1.32E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	4.32E-01	4.32E-01	8.00E+02	**5E-04**	**5E-04**	1.61E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	1.15E+00	Y	1.10E+00	1.10E+00	3.00E+01	**4E-02**	**4E-02**	4.09E-01	7.80E-06		**3E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.10E+00	Y	1.05E+00	1.05E+00	9.77E+01	**1E-02**	**1E-02**	3.92E-01	2.30E-05		**9E-06**
ETHYL ACETATE	141-78-6	6.12E+00	Y	5.87E+00	5.87E+00	7.00E+01	**8E-02**	**8E-02**	2.18E+00	-		---
ETHYLBENZENE	100-41-4	3.25E-01	N	3.12E-01	3.12E-01	1.00E+03	**3E-04**	**3E-04**	1.16E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	8.30E-01	Y	7.96E-01	7.96E-01	1.00E+02	**8E-03**	**8E-03**	2.96E-01	-		---
METHYLENE CHLORIDE	75-09-2	1.10E+00	Y	1.05E+00	1.05E+00	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**1E-08**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.25E-01	N	3.12E-01	3.12E-01	1.00E+02	**3E-03**	**3E-03**	1.16E-01	-		---
TETRACHLOROETHENE	127-18-4	3.60E+00	Y	3.45E+00	3.45E+00	4.00E+01	**9E-02**	**9E-02**	1.28E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	4.05E-01	N	3.88E-01	3.88E-01	2.00E+00	**2E-01**	**2E-01**	M	4.10E-06	M	**8E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		---
VINYL CHLORIDE	75-01-4	1.92E-01	N	1.84E-01	1.84E-01	8.00E+01	**2E-03**	**2E-03**	M	4.40E-06	M	**8E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0036H**	**Total Inhalation**	**4E+00**	**4E+00**	**2E-04**
		ND risk contribution	**4E+00**	**4E+00**	**2E-04**
		Risk for Detects only	**2E-01**	**2E-01**	**1E-05**
		Site-related only	**3E-01**	**3E-01**	**2E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0036H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0036H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0036H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.10E+00	3.01E-01	1.81E-01	4.52E-01	1.51E-01	1.0E-08		3E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	4.05E-01	1.11E-01	6.66E-02	1.66E-01	5.55E-02	1.0E-06	kidney	1E-07	7E-08	2E-07	6E-08	**4E-07**
TRICHLOROETHENE	79-01-6	4.05E-01	3.33E-02		1.11E-01		3.1E-06	NHL+liver	1E-07		3E-07		**4E-07**
VINYL CHLORIDE	75-01-4	1.92E-01	5.25E-02	3.15E-02	7.87E-02	2.62E-02	4.4E-06		2E-07	1E-07	3E-07	1E-07	**8E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0037H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.40E+00	Y	3.26E+00	3.26E+00	4.00E+01	**8E-02**	**8E-02**	1.21E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0037H**	**Total Inhalation**	**1E-01**	**1E-01**	**4E-07**
		ND risk contribution	**2E-02**	**2E-02**	**1E-07**
		Risk for Detects only	**8E-02**	**8E-02**	**3E-07**
		Site-related only	**1E-01**	**1E-01**	**4E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0037H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-01	Y	1.05E-01	1.05E-01	NA	---	---	3.92E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	3.00E-01	Y	2.88E-01	2.88E-01	2.00E+00	**1E-01**	**1E-01**	1.07E-01	3.00E-05		**3E-06**
BENZYL CHLORIDE	100-44-7	1.20E-01	N	1.15E-01	1.15E-01	1.00E+00	**1E-01**	**1E-01**	4.27E-02	4.90E-05		**2E-06**
1,4-DIOXANE	123-91-1	1.70E+00	Y	1.63E+00	1.63E+00	3.00E+01	**5E-02**	**5E-02**	6.05E-01	5.00E-06		**3E-06**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.60E+00	N	1.53E+00	1.53E+00	2.00E+00	**8E-01**	**8E-01**	5.70E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.40E+00	Y	5.18E+00	5.18E+00	6.00E+01	**9E-02**	**9E-02**	1.92E+00	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	7.20E+00	Y	6.90E+00	6.90E+00	7.00E+00	**1E+00**	**1E+00**	2.56E+00	2.60E-05		**7E-05**
1,2-DICHLOROPROPANE	78-87-5	8.40E-02	Y	8.05E-02	8.05E-02	4.00E+00	**2E-02**	**2E-02**	2.99E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.30E+00	Y	1.25E+00	1.25E+00	6.00E+01	**2E-02**	**2E-02**	4.63E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	4.32E-01	4.32E-01	8.00E+02	**5E-04**	**5E-04**	1.61E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	3.70E+00	Y	3.55E+00	3.55E+00	3.00E+01	**1E-01**	**1E-01**	1.32E+00	7.80E-06		**1E-05**
BROMODICHLOROMETHANE	75-27-4	5.90E-01	Y	5.66E-01	5.66E-01	NA	---	---	2.10E-01	3.70E-05		**8E-06**
BROMOMETHANE	74-83-9	4.00E-01	N	3.84E-01	3.84E-01	5.00E+00	**8E-02**	**8E-02**	1.42E-01	-		---
CARBON TETRACHLORIDE	56-23-5	5.90E-01	Y	5.66E-01	5.66E-01	1.00E+02	**6E-03**	**6E-03**	2.10E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	3.30E+00	Y	3.16E+00	3.16E+00	9.77E+01	**3E-02**	**3E-02**	1.18E+00	2.30E-05		**3E-05**
ETHYL ACETATE	141-78-6	7.92E-01	Y	7.60E-01	7.60E-01	7.00E+01	**1E-02**	**1E-02**	2.82E-01	-		---
ETHYLBENZENE	100-41-4	3.90E+00	Y	3.74E+00	3.74E+00	1.00E+03	**4E-03**	**4E-03**	1.39E+00	2.50E-06		**3E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	2.15E+00	N	2.06E+00	2.06E+00	NA	---	---	7.66E-01	2.20E-05		**2E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	7.50E+01	Y	7.19E+01	7.19E+01	2.00E+02	**4E-01**	**4E-01**	2.67E+01	-		---
M,P-XYLENE	108-38-3	1.70E+01	Y	1.63E+01	1.63E+01	1.00E+02	**2E-01**	**2E-01**	6.05E+00	-		---
METHYLENE CHLORIDE	75-09-2	8.20E-01	Y	7.86E-01	7.86E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**8E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	5.70E+00	Y	5.47E+00	5.47E+00	1.00E+02	**5E-02**	**5E-02**	2.03E+00	-		---
TETRACHLOROETHENE	127-18-4	8.20E+00	Y	7.86E+00	7.86E+00	4.00E+01	**2E-01**	**2E-01**	2.92E+00	2.60E-07		**8E-07**
TRICHLOROETHENE	79-01-6	5.20E-02	Y	4.99E-02	4.99E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0037H**	**Total Inhalation**	**5E+00**	**5E+00**	**3E-04**
		ND risk contribution	**3E+00**	**3E+00**	**2E-04**
		Risk for Detects only	**2E+00**	**2E+00**	**1E-04**
		Site-related only	**3E-01**	**3E-01**	**4E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0037H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	3.10E-01	Y	2.97E-01	2.97E-01	7.00E+00	**4E-02**	**4E-02**	1.10E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	1.75E-02	N	1.68E-02	1.68E-02	8.00E+02	**2E-05**	**2E-05**	6.23E-03	1.10E-05		**7E-08**
BENZENE	71-43-2	1.00E+00	Y	9.59E-01	9.59E-01	3.00E+01	**3E-02**	**3E-02**	3.56E-01	7.80E-06		**3E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.70E-01	Y	3.55E-01	3.55E-01	1.00E+02	**4E-03**	**4E-03**	1.32E-01	6.00E-06		**8E-07**
CHLOROFORM	67-66-3	4.70E-01	Y	4.51E-01	4.51E-01	9.77E+01	**5E-03**	**5E-03**	1.67E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	2.40E+00	Y	2.30E+00	2.30E+00	7.00E+01	**3E-02**	**3E-02**	8.55E-01	-		---
ETHYLBENZENE	100-41-4	3.10E-01	Y	2.97E-01	2.97E-01	1.00E+03	**3E-04**	**3E-04**	1.10E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	9.80E-01	Y	9.40E-01	9.40E-01	1.00E+02	**9E-03**	**9E-03**	3.49E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	7.20E-02	Y	6.90E-02	6.90E-02	3.00E+00	**2E-02**	**2E-02**	2.56E-02	3.40E-05		**9E-07**
O-XYLENE	95-47-6	4.00E-01	Y	3.84E-01	3.84E-01	1.00E+02	**4E-03**	**4E-03**	1.42E-01	-		---
TETRACHLOROETHENE	127-18-4	8.70E+00	Y	8.34E+00	8.34E+00	4.00E+01	**2E-01**	**2E-01**	3.10E+00	2.60E-07		**8E-07**
TRICHLOROETHENE	79-01-6	1.00E-01	Y	9.59E-02	9.59E-02	2.00E+00	**5E-02**	**5E-02**	M	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0037H**	**Total Inhalation**	**4E-01**	**4E-01**	**1E-05**
		Based on NDs only	**2E-05**	**2E-05**	**7E-08**
		Based on Detects only	**4E-01**	**4E-01**	**1E-05**
		Site-related only	**3E-01**	**3E-01**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0037H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.20E-01	2.25E-01	1.35E-01	3.37E-01	1.12E-01	1.0E-08		2E-09	1E-09	3E-09	1E-09	**8E-09**
TRICHLOROETHENE	79-01-6	5.20E-02	1.42E-02	8.55E-03	2.14E-02	7.12E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.20E-02	4.27E-03		1.42E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	2.74E-02	1.64E-02	4.11E-02	1.37E-02	1.0E-06	kidney	3E-08	2E-08	4E-08	1E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.00E-01	8.22E-03		2.74E-02		3.1E-06	NHL+liver	3E-08		8E-08		**1E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0038H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	3.36E-01	3.36E-01	4.00E+01	**8E-03**	**8E-03**	1.25E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0038H**	**Total Inhalation**	**1E-01**	**1E-01**	**6E-07**
		ND risk contribution	**1E-01**	**1E-01**	**6E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**1E-01**	**1E-01**	**6E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0038H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
1,4-DIOXANE	123-91-1	9.00E-02	N	8.63E-02	8.63E-02	3.00E+01	**3E-03**	**3E-03**	3.21E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	2.92E-01	2.92E-01	7.00E+00	**4E-02**	**4E-02**	1.09E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	8.64E-01	8.64E-01	8.00E+02	**1E-03**	**1E-03**	3.21E-01	1.10E-05		**4E-06**
BENZENE	71-43-2	5.20E-01	Y	4.99E-01	4.99E-01	3.00E+01	**2E-02**	**2E-02**	1.85E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.50E+00	Y	1.44E+00	1.44E+00	9.77E+01	**1E-02**	**1E-02**	5.34E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	7.56E+00	Y	7.25E+00	7.25E+00	7.00E+01	**1E-01**	**1E-01**	2.69E+00	-		**---**
ETHYLBENZENE	100-41-4	3.25E-01	N	3.12E-01	3.12E-01	1.00E+03	**3E-04**	**3E-04**	1.16E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	**---**	**---**	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.30E+00	Y	1.25E+00	1.25E+00	1.00E+02	**1E-02**	**1E-02**	4.63E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.12E+00	Y	3.00E+00	3.00E+00	6.00E+02	**5E-03**	**5E-03**	M	1.00E-08	M	**3E-08**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	3.25E-01	N	3.12E-01	3.12E-01	1.00E+02	**3E-03**	**3E-03**	1.16E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.70E-01	N	1.63E-01	1.63E-01	4.00E+01	**4E-03**	**4E-03**	6.05E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	1.35E-01	N	1.29E-01	1.29E-01	2.00E+00	**6E-02**	**6E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	3.37E-01	3.37E-01	2.00E+02	**2E-03**	**2E-03**	1.25E-01	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0038H**	**Total Inhalation**	**4E+00**	**4E+00**	**2E-04**
		ND risk contribution	**4E+00**	**4E+00**	**2E-04**
		Risk for Detects only	**2E-01**	**2E-01**	**1E-05**
		Site-related only	**7E-02**	**7E-02**	**7E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0038H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0038H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0038H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.12E+00	8.56E-01	5.14E-01	1.28E+00	4.28E-01	1.0E-08		9E-09	5E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	1.35E-01	3.70E-02	2.22E-02	5.55E-02	1.85E-02	1.0E-06	kidney	4E-08	2E-08	6E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.35E-01	1.11E-02		3.70E-02		3.1E-06	NHL+liver	3E-08		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0040H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.53E+02	Y	1.47E+02	1.47E+02	4.00E+01	**4E+00**	**4E+00**	5.45E+01	2.60E-07		**1E-05**
TRICHLOROETHENE	79-01-6	1.26E+01	Y	1.21E+01	1.21E+01	2.00E+00	**6E+00**	**6E+00**	M	4.10E-06	M	**3E-05**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0040H**	**Total Inhalation**	**1E+01**	**1E+01**	**4E-05**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**1E+01**	**1E+01**	**4E-05**
		Site-related only	**1E+01**	**1E+01**	**4E-05**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0040H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.44E+00	Y	1.38E+00	1.38E+00	2.00E+00	**7E-01**	**7E-01**	5.12E-01	3.00E-05		**2E-05**
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	9.00E-02	N	8.63E-02	8.63E-02	3.00E+01	**3E-03**	**3E-03**	3.21E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.10E+00	Y	3.93E+00	3.93E+00	6.00E+01	**7E-02**	**7E-02**	1.46E+00	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	3.05E-01	N	2.92E-01	2.92E-01	7.00E+00	**4E-02**	**4E-02**	1.09E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	1.10E+00	Y	1.05E+00	1.05E+00	6.00E+01	**2E-02**	**2E-02**	3.92E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	4.32E-01	4.32E-01	8.00E+02	**5E-04**	**5E-04**	1.61E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	2.60E+00	Y	2.49E+00	2.49E+00	3.00E+01	**8E-02**	**8E-02**	9.26E-01	7.80E-06		**7E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	2.91E-01	N	2.79E-01	2.79E-01	5.00E+00	**6E-02**	**6E-02**	1.04E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.72E-01	N	4.52E-01	4.52E-01	1.00E+02	**5E-03**	**5E-03**	1.68E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	4.80E+00	Y	4.60E+00	4.60E+00	9.77E+01	**5E-02**	**5E-02**	1.71E+00	2.30E-05		**4E-05**
ETHYL ACETATE	141-78-6	1.30E+00	Y	1.25E+00	1.25E+00	7.00E+01	**2E-02**	**2E-02**	4.63E-01	-		**---**
ETHYLBENZENE	100-41-4	2.20E+00	Y	2.11E+00	2.11E+00	1.00E+03	**2E-03**	**2E-03**	7.84E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	7.90E+00	Y	7.58E+00	7.58E+00	1.00E+02	**8E-02**	**8E-02**	2.81E+00	-		**---**
METHYLENE CHLORIDE	75-09-2	2.60E+02	Y	2.49E+02	2.49E+02	6.00E+02	**4E-01**	**4E-01**	M	1.00E-08	M	**3E-06**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.34E+00	Y	2.25E+00	2.25E+00	1.00E+02	**2E-02**	**2E-02**	8.35E-01	-		**---**
TETRACHLOROETHENE	127-18-4	8.13E+01	Y	7.80E+01	7.80E+01	4.00E+01	**2E+00**	**2E+00**	2.90E+01	2.60E-07		**8E-06**
TRICHLOROETHENE	79-01-6	5.40E+00	Y	5.18E+00	5.18E+00	2.00E+00	**3E+00**	**3E+00**	M	4.10E-06	M	**1E-05**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0040H**	**Total Inhalation**	**8E+00**	**8E+00**	**2E-04**
		ND risk contribution	**2E+00**	**2E+00**	**2E-04**
		Risk for Detects only	**6E+00**	**6E+00**	**9E-05**
		Site-related only	**5E+00**	**5E+00**	**2E-05**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0040H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0040H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0040H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.26E+01	3.45E+00	2.07E+00	5.18E+00	1.73E+00	1.0E-06	kidney	3E-06	2E-06	5E-06	2E-06	**1E-05**
TRICHLOROETHENE	79-01-6	1.26E+01	1.04E+00		3.45E+00		3.1E-06	NHL+liver	3E-06		1E-05		**1E-05**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.60E+02	7.12E+01	4.27E+01	1.07E+02	3.56E+01	1.0E-08		7E-07	4E-07	1E-06	4E-07	**3E-06**
TRICHLOROETHENE	79-01-6	5.40E+00	1.48E+00	8.88E-01	2.22E+00	7.40E-01	1.0E-06	kidney	1E-06	9E-07	2E-06	7E-07	**5E-06**
TRICHLOROETHENE	79-01-6	5.40E+00	4.44E-01		1.48E+00		3.1E-06	NHL+liver	1E-06		5E-06		**6E-06**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0041H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01		TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	4.60E+00	Y	4.41E+00	4.41E+00	4.00E+01	**1E-01**	**1E-01**	1.64E+00	2.60E-07	**4E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M **5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0041H**	**Total Inhalation**	**2E-01**	**2E-01**	**9E-07**
		ND risk contribution	**1E-01**	**1E-01**	**5E-07**
		Risk for Detects only	**1E-01**	**1E-01**	**4E-07**
		Site-related only	**2E-01**	**2E-01**	**9E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0041H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	1.01E-02	1.01E-02	NA	---	---	3.74E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	4.90E-02	N	4.70E-02	4.70E-02	2.00E+00	**2E-02**	**2E-02**	1.75E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	8.15E-02	8.15E-02	1.00E+00	**8E-02**	**8E-02**	3.03E-02	4.90E-05		**1E-06**
1,4-DIOXANE	123-91-1	7.00E-02	N	6.71E-02	6.71E-02	3.00E+01	**2E-03**	**2E-03**	2.49E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	6.71E-03	6.71E-03	2.00E-01	**3E-02**	**3E-02**	2.49E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.80E-01	N	4.60E-01	4.60E-01	2.00E+00	**2E-01**	**2E-01**	1.71E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E-01	Y	1.34E-01	1.34E-01	6.00E+01	**2E-03**	**2E-03**	4.99E-02	-		---
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	3.16E-02	3.16E-02	9.00E+00	**4E-03**	**4E-03**	1.18E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	5.10E-01	Y	4.89E-01	4.89E-01	7.00E+00	**7E-02**	**7E-02**	1.82E-01	2.60E-05		**5E-06**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	8.63E-02	8.63E-02	4.00E+00	**2E-02**	**2E-02**	3.21E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	5.75E-02	5.75E-02	6.00E+01	**1E-03**	**1E-03**	2.14E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	4.79E-02	4.79E-02	8.00E+02	**6E-05**	**6E-05**	1.78E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	4.80E-01	Y	4.60E-01	4.60E-01	3.00E+01	**2E-02**	**2E-02**	1.71E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	1.20E-01	1.20E-01	NA	---	---	4.45E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	6.50E-01	N	6.23E-01	6.23E-01	5.00E+00	**1E-01**	**1E-01**	2.32E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	4.12E-01	4.12E-01	1.00E+02	**4E-03**	**4E-03**	1.53E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	9.00E-01	Y	8.63E-01	8.63E-01	9.77E+01	**9E-03**	**9E-03**	3.21E-01	2.30E-05		**7E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.40E-01	Y	1.34E-01	1.34E-01	1.00E+03	**1E-04**	**1E-04**	4.99E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	6.23E-01	6.23E-01	NA	---	---	2.32E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	2.70E+01	Y	2.59E+01	2.59E+01	2.00E+02	**1E-01**	**1E-01**	9.62E+00	-		---
M,P-XYLENE	108-38-3	4.00E-01	Y	3.84E-01	3.84E-01	1.00E+02	**4E-03**	**4E-03**	1.42E-01	-		---
METHYLENE CHLORIDE	75-09-2	3.20E-01	N	3.07E-01	3.07E-01	6.00E+02	**5E-04**	**5E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.40E-01	Y	1.34E-01	1.34E-01	1.00E+02	**1E-03**	**1E-03**	4.99E-02	-		---
TETRACHLOROETHENE	127-18-4	1.80E-01	Y	1.73E-01	1.73E-01	4.00E+01	**4E-03**	**4E-03**	6.41E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	1.65E-02	N	1.58E-02	1.58E-02	2.00E+00	**8E-03**	**8E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.00E-03	N	7.67E-03	7.67E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0041H**	**Total Inhalation**	**8E-01**	**8E-01**	**3E-05**
		ND risk contribution	**5E-01**	**5E-01**	**2E-05**
		Risk for Detects only	**2E-01**	**2E-01**	**1E-05**
		Site-related only	**1E-02**	**1E-02**	**2E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0041H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0041H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0041H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.20E-01	8.77E-02	5.26E-02	1.32E-01	4.38E-02	1.0E-08		9E-10	5E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.65E-02	4.52E-03	2.71E-03	6.78E-03	2.26E-03	1.0E-06	kidney	5E-09	3E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.65E-02	1.36E-03		4.52E-03		3.1E-06	NHL+liver	4E-09		1E-08		**2E-08**
VINYL CHLORIDE	75-01-4	8.00E-03	2.19E-03	1.32E-03	3.29E-03	1.10E-03	4.4E-06		1E-08	6E-09	1E-08	5E-09	**3E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0045S**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	2.50E-01	N	2.40E-01	2.40E-01	7.00E+00	**3E-02**	**3E-02**	8.90E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	4.00E+01	Y	3.84E+01	3.84E+01	4.00E+01	**1E+00**	**1E+00**	1.42E+01	2.60E-07		**4E-06**
TRICHLOROETHENE	79-01-6	1.30E+00	Y	1.25E+00	1.25E+00	2.00E+00	**6E-01**	**6E-01**	M	4.10E-06	M	**3E-06**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	5.30E-01	Y	5.08E-01	5.08E-01	8.00E+01	**6E-03**	**6E-03**	M	4.40E-06	M	**2E-06**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0045S**	**Total Inhalation**	**2E+00**	**2E+00**	**1E-05**
		ND risk contribution	**3E-02**	**3E-02**	**2E-06**
		Risk for Detects only	**2E+00**	**2E+00**	**9E-06**
		Site-related only	**2E+00**	**2E+00**	**9E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0045S**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0045S**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0045S**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0045S**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0045S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.30E+00	3.56E-01	2.14E-01	5.34E-01	1.78E-01	1.0E-06	kidney	4E-07	2E-07	5E-07	2E-07	**1E-06**
TRICHLOROETHENE	79-01-6	1.30E+00	1.07E-01		3.56E-01		3.1E-06	NHL+liver	3E-07		1E-06		**1E-06**
VINYL CHLORIDE	75-01-4	5.30E-01	1.45E-01	8.71E-02	2.18E-01	7.26E-02	4.4E-06		6E-07	4E-07	1E-06	3E-07	**2E-06**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0047H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	9.00E+00	Y	8.63E+00	8.63E+00	4.00E+01	**2E-01**	**2E-01**	3.21E+00	2.60E-07		**8E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0047H**	**Total Inhalation**	**3E-01**	**3E-01**	**1E-06**
		ND risk contribution	**1E-01**	**1E-01**	**5E-07**
		Risk for Detects only	**2E-01**	**2E-01**	**8E-07**
		Site-related only	**3E-01**	**3E-01**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0047H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0047H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0047H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0047H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0047H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0050H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	3.36E-01	3.36E-01	4.00E+01	**8E-03**	**8E-03**	1.25E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0050H**	**Total Inhalation**	**1E-01**	**1E-01**	**6E-07**
		ND risk contribution	**1E-01**	**1E-01**	**6E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**1E-01**	**1E-01**	**6E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0050H**

Pathway:

Inhalation of Indoor Air (SUMMA)

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0050H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0050H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0050H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0050H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0051H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	4.02E+02	Y	3.86E+02	3.86E+02	4.00E+01	**1E+01**	**1E+01**	1.43E+02	2.60E-07		**4E-05**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0051H**	**Total Inhalation**	**1E+01**	**1E+01**	**4E-05**
		ND risk contribution	**1E-01**	**1E-01**	**5E-07**
		Risk for Detects only	**1E+01**	**1E+01**	**4E-05**
		Site-related only	**1E+01**	**1E+01**	**4E-05**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0051H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
BENZYL CHLORIDE	100-44-7	2.35E-01	N	2.25E-01	2.25E-01	1.00E+00	**2E-01**	**2E-01**	8.37E-02	4.90E-05		**4E-06**
1,4-DIOXANE	123-91-1	2.20E-01	Y	2.11E-01	2.11E-01	3.00E+01	**7E-03**	**7E-03**	7.84E-02	5.00E-06		**4E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.20E+00	N	1.15E+00	1.15E+00	2.00E+00	**6E-01**	**6E-01**	4.27E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	7.80E-01	Y	7.48E-01	7.48E-01	6.00E+01	**1E-02**	**1E-02**	2.78E-01	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	1.34E-01	1.34E-01	7.00E+00	**2E-02**	**2E-02**	4.99E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	3.55E-01	3.55E-01	6.00E+01	**6E-03**	**6E-03**	1.32E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	2.10E-01	Y	2.01E-01	2.01E-01	8.00E+02	**3E-04**	**3E-04**	7.48E-02	1.10E-05		**8E-07**
BENZENE	71-43-2	7.02E-01	Y	6.74E-01	6.74E-01	3.00E+01	**2E-02**	**2E-02**	2.50E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	3.60E-01	Y	3.45E-01	3.45E-01	NA	---	---	1.28E-01	3.70E-05		**5E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	7.67E-01	7.67E-01	5.00E+00	**2E-01**	**2E-01**	2.85E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	4.60E-01	4.60E-01	1.00E+02	**5E-03**	**5E-03**	1.71E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	2.10E+00	Y	2.01E+00	2.01E+00	9.77E+01	**2E-02**	**2E-02**	7.48E-01	2.30E-05		**2E-05**
ETHYL ACETATE	141-78-6	5.04E+00	Y	4.83E+00	4.83E+00	7.00E+01	**7E-02**	**7E-02**	1.80E+00	-		---
ETHYLBENZENE	100-41-4	9.50E-01	Y	9.11E-01	9.11E-01	1.00E+03	**9E-04**	**9E-04**	3.38E-01	2.50E-06		**8E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	9.50E-01	N	9.11E-01	9.11E-01	NA	---	---	3.38E-01	2.20E-05		**7E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	5.20E+02	Y	4.99E+02	4.99E+02	2.00E+02	**2E+00**	**2E+00**	1.85E+02	-		---
M,P-XYLENE	108-38-3	3.00E+00	Y	2.88E+00	2.88E+00	1.00E+02	**3E-02**	**3E-02**	1.07E+00	-		---
METHYLENE CHLORIDE	75-09-2	9.40E-01	Y	9.01E-01	9.01E-01	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**9E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	9.10E-01	Y	8.73E-01	8.73E-01	1.00E+02	**9E-03**	**9E-03**	3.24E-01	-		---
TETRACHLOROETHENE	127-18-4	3.70E+00	Y	3.55E+00	3.55E+00	4.00E+01	**9E-02**	**9E-02**	1.32E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	6.00E-02	Y	5.75E-02	5.75E-02	2.00E+00	**3E-02**	**3E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	1.83E+00	Y	1.75E+00	1.75E+00	2.00E+02	**9E-03**	**9E-03**	6.52E-01	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0051H**	**Total Inhalation**	**6E+00**	**6E+00**	**2E-04**
		ND risk contribution	**3E+00**	**3E+00**	**2E-04**
		Risk for Detects only	**3E+00**	**3E+00**	**3E-05**
		Site-related only	**1E-01**	**1E-01**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0051H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	7.00E-02	Y	6.71E-02	6.71E-02	7.00E+00	**1E-02**	**1E-02**	2.49E-02	2.60E-05		**6E-07**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	9.00E-02	Y	8.63E-02	8.63E-02	8.00E+02	**1E-04**	**1E-04**	3.21E-02	1.10E-05		**4E-07**
BENZENE	71-43-2	4.00E-01	Y	3.84E-01	3.84E-01	3.00E+01	**1E-02**	**1E-02**	1.42E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.00E-01	Y	2.88E-01	2.88E-01	1.00E+02	**3E-03**	**3E-03**	1.07E-01	6.00E-06		**6E-07**
CHLOROFORM	67-66-3	6.30E-01	Y	6.04E-01	6.04E-01	9.77E+01	**6E-03**	**6E-03**	2.24E-01	2.30E-05		**5E-06**
ETHYL ACETATE	141-78-6	7.60E+00	Y	7.29E+00	7.29E+00	7.00E+01	**1E-01**	**1E-01**	2.71E+00	-		---
ETHYLBENZENE	100-41-4	7.20E-01	Y	6.90E-01	6.90E-01	1.00E+03	**7E-04**	**7E-04**	2.56E-01	2.50E-06		**6E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.30E+00	Y	1.25E+00	1.25E+00	1.00E+02	**1E-02**	**1E-02**	4.63E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	8.30E-02	Y	7.96E-02	7.96E-02	3.00E+00	**3E-02**	**3E-02**	2.96E-02	3.40E-05		**1E-06**
O-XYLENE	95-47-6	5.10E-01	Y	4.89E-01	4.89E-01	1.00E+02	**5E-03**	**5E-03**	1.82E-01	-		---
TETRACHLOROETHENE	127-18-4	2.10E+00	Y	2.01E+00	2.01E+00	4.00E+01	**5E-02**	**5E-02**	7.48E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	3.50E-02	Y	3.36E-02	3.36E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**7E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0051H**	**Total Inhalation**	**2E-01**	**2E-01**	**1E-05**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**2E-01**	**2E-01**	**1E-05**
		Site-related only	**7E-02**	**7E-02**	**3E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0051H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.40E-01	2.58E-01	1.55E-01	3.86E-01	1.29E-01	1.0E-08		3E-09	2E-09	4E-09	1E-09	**9E-09**
TRICHLOROETHENE	79-01-6	6.00E-02	1.64E-02	9.86E-03	2.47E-02	8.22E-03	1.0E-06	kidney	2E-08	1E-08	2E-08	8E-09	**6E-08**
TRICHLOROETHENE	79-01-6	6.00E-02	4.93E-03		1.64E-02		3.1E-06	NHL+liver	2E-08		5E-08		**7E-08**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	3.50E-02	9.59E-03	5.75E-03	1.44E-02	4.79E-03	1.0E-06	kidney	1E-08	6E-09	1E-08	5E-09	**3E-08**
TRICHLOROETHENE	79-01-6	3.50E-02	2.88E-03		9.59E-03		3.1E-06	NHL+liver	9E-09		3E-08		**4E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0052H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.90E+00	Y	1.82E+00	1.82E+00	4.00E+01	**5E-02**	**5E-02**	6.77E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0052H**	**Total Inhalation**	**2E-01**	**2E-01**	**7E-07**
		ND risk contribution	**1E-01**	**1E-01**	**5E-07**
		Risk for Detects only	**5E-02**	**5E-02**	**2E-07**
		Site-related only	**2E-01**	**2E-01**	**7E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0052H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0052H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0052H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0052H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0052H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0053H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01		TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**				**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	2.41E+01	Y	2.31E+01	2.31E+01	4.00E+01	**6E-01**	**6E-01**	8.58E+00	2.60E-07	**2E-06**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M **5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0053H**	**Total Inhalation**	**7E-01**	**7E-01**	**3E-06**
		ND risk contribution	**1E-01**	**1E-01**	**5E-07**
		Risk for Detects only	**6E-01**	**6E-01**	**2E-06**
		Site-related only	**7E-01**	**7E-01**	**3E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0053H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.90E-01	Y	1.82E-01	1.82E-01	2.00E+00	**9E-02**	**9E-02**	6.77E-02	3.00E-05		**2E-06**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	1.05E-01	1.05E-01	1.00E+00	**1E-01**	**1E-01**	3.92E-02	4.90E-05		**2E-06**
1,4-DIOXANE	123-91-1	2.10E-01	N	2.01E-01	2.01E-01	3.00E+01	**7E-03**	**7E-03**	7.48E-02	5.00E-06		**4E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.45E+00	N	1.39E+00	1.39E+00	2.00E+00	**7E-01**	**7E-01**	5.16E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	8.50E-01	Y	8.15E-01	8.15E-01	6.00E+01	**1E-02**	**1E-02**	3.03E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	7.60E-02	Y	7.29E-02	7.29E-02	7.00E+00	**1E-02**	**1E-02**	2.71E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	3.70E-01	N	3.55E-01	3.55E-01	6.00E+01	**6E-03**	**6E-03**	1.32E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.51E-01	N	4.32E-01	4.32E-01	8.00E+02	**5E-04**	**5E-04**	1.61E-01	1.10E-05		**2E-06**
BENZENE	71-43-2	9.60E-01	Y	9.21E-01	9.21E-01	3.00E+01	**3E-02**	**3E-02**	3.42E-01	7.80E-06		**3E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	3.70E-01	N	3.55E-01	3.55E-01	5.00E+00	**7E-02**	**7E-02**	1.32E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	4.41E-01	4.41E-01	1.00E+02	**4E-03**	**4E-03**	1.64E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	9.00E-01	Y	8.63E-01	8.63E-01	9.77E+01	**9E-03**	**9E-03**	3.21E-01	2.30E-05		**7E-06**
ETHYL ACETATE	141-78-6	3.13E+00	Y	3.00E+00	3.00E+00	7.00E+01	**4E-02**	**4E-02**	1.12E+00	-		**---**
ETHYLBENZENE	100-41-4	3.30E+00	Y	3.16E+00	3.16E+00	1.00E+03	**3E-03**	**3E-03**	1.18E+00	2.50E-06		**3E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.95E+00	N	1.87E+00	1.87E+00	NA	---	---	6.95E-01	2.20E-05		**2E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	5.40E+00	Y	5.18E+00	5.18E+00	2.00E+02	**3E-02**	**3E-02**	1.92E+00	-		**---**
M,P-XYLENE	108-38-3	2.40E+00	Y	2.30E+00	2.30E+00	1.00E+02	**2E-02**	**2E-02**	8.55E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	8.33E-01	Y	7.99E-01	7.99E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**8E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	8.68E-01	Y	8.32E-01	8.32E-01	1.00E+02	**8E-03**	**8E-03**	3.09E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.36E+01	Y	1.30E+01	1.30E+01	4.00E+01	**3E-01**	**3E-01**	4.83E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	4.70E-01	Y	4.51E-01	4.51E-01	2.00E+00	**2E-01**	**2E-01**	M	4.10E-06	M	**1E-06**
VINYL ACETATE	108-05-4	2.65E-01	N	2.54E-01	2.54E-01	2.00E+02	**1E-03**	**1E-03**	9.44E-02	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0053H**	**Total Inhalation**	**4E+00**	**4E+00**	**2E-04**
		ND risk contribution	**3E+00**	**3E+00**	**2E-04**
		Risk for Detects only	**8E-01**	**8E-01**	**2E-05**
		Site-related only	**6E-01**	**6E-01**	**3E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0053H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	5.30E-02	Y	5.08E-02	5.08E-02	7.00E+00	**7E-03**	**7E-03**	1.89E-02	2.60E-05		**5E-07**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	1.75E-02	N	1.68E-02	1.68E-02	8.00E+02	**2E-05**	**2E-05**	6.23E-03	1.10E-05		**7E-08**
BENZENE	71-43-2	6.40E-01	Y	6.14E-01	6.14E-01	3.00E+01	**2E-02**	**2E-02**	2.28E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.70E-01	Y	3.55E-01	3.55E-01	1.00E+02	**4E-03**	**4E-03**	1.32E-01	6.00E-06		**8E-07**
CHLOROFORM	67-66-3	2.60E-01	Y	2.49E-01	2.49E-01	9.77E+01	**3E-03**	**3E-03**	9.26E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	1.40E-01	Y	1.34E-01	1.34E-01	7.00E+01	**2E-03**	**2E-03**	4.99E-02	-		---
ETHYLBENZENE	100-41-4	2.30E-01	Y	2.21E-01	2.21E-01	1.00E+03	**2E-04**	**2E-04**	8.19E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	7.20E-01	Y	6.90E-01	6.90E-01	1.00E+02	**7E-03**	**7E-03**	2.56E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	3.60E-02	Y	3.45E-02	3.45E-02	3.00E+00	**1E-02**	**1E-02**	1.28E-02	3.40E-05		**4E-07**
O-XYLENE	95-47-6	2.30E-01	Y	2.21E-01	2.21E-01	1.00E+02	**2E-03**	**2E-03**	8.19E-02	-		---
TETRACHLOROETHENE	127-18-4	1.10E+01	Y	1.05E+01	1.05E+01	4.00E+01	**3E-01**	**3E-01**	3.92E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	6.90E-02	Y	6.62E-02	6.62E-02	2.00E+00	**3E-02**	**3E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0053H**	**Total Inhalation**	**4E-01**	**4E-01**	**7E-06**
		Based on NDs only	**2E-05**	**2E-05**	**7E-08**
		Based on Detects only	**4E-01**	**4E-01**	**7E-06**
		Site-related only	**3E-01**	**3E-01**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0053H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.33E-01	2.28E-01	1.37E-01	3.42E-01	1.14E-01	1.0E-08		2E-09	1E-09	3E-09	1E-09	**8E-09**
TRICHLOROETHENE	79-01-6	4.70E-01	1.29E-01	7.73E-02	1.93E-01	6.44E-02	1.0E-06	kidney	1E-07	8E-08	2E-07	6E-08	**5E-07**
TRICHLOROETHENE	79-01-6	4.70E-01	3.86E-02		1.29E-01		3.1E-06	NHL+liver	1E-07		4E-07		**5E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	6.90E-02	1.89E-02	1.13E-02	2.84E-02	9.45E-03	1.0E-06	kidney	2E-08	1E-08	3E-08	9E-09	**7E-08**
TRICHLOROETHENE	79-01-6	6.90E-02	5.67E-03		1.89E-02		3.1E-06	NHL+liver	2E-08		6E-08		**8E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0054H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	2.14E+01	Y	2.05E+01	2.05E+01	4.00E+01	**5E-01**	**5E-01**	7.62E+00	2.60E-07		**2E-06**
TRICHLOROETHENE	79-01-6	9.30E+00	Y	8.92E+00	8.92E+00	2.00E+00	**4E+00**	**4E+00**	M	4.10E-06	M	**2E-05**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0054H**	**Total Inhalation**	**5E+00**	**5E+00**	**2E-05**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**5E+00**	**5E+00**	**2E-05**
		Site-related only	**5E+00**	**5E+00**	**2E-05**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0054H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0054H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0054H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0054H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0054H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.30E+00	2.55E+00	1.53E+00	3.82E+00	1.27E+00	1.0E-06	kidney	3E-06	2E-06	4E-06	1E-06	**9E-06**
TRICHLOROETHENE	79-01-6	9.30E+00	7.64E-01		2.55E+00		3.1E-06	NHL+liver	2E-06		8E-06		**1E-05**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0055H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.50E+00	Y	1.44E+00	1.44E+00	4.00E+01	**4E-02**	**4E-02**	5.34E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0055H**	**Total Inhalation**	**2E-01**	**2E-01**	**7E-07**
		ND risk contribution	**1E-01**	**1E-01**	**5E-07**
		Risk for Detects only	**4E-02**	**4E-02**	**1E-07**
		Site-related only	**2E-01**	**2E-01**	**7E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0055H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0055H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0055H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0055H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0055H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0056H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	6.90E+00	Y	6.62E+00	6.62E+00	4.00E+01	**2E-01**	**2E-01**	2.46E+00	2.60E-07		**6E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0056H**	**Total Inhalation**	**3E-01**	**3E-01**	**1E-06**
		ND risk contribution	**1E-01**	**1E-01**	**5E-07**
		Risk for Detects only	**2E-01**	**2E-01**	**6E-07**
		Site-related only	**3E-01**	**3E-01**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0056H**

Pathway:

Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0056H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0056H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0056H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0056H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0057H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	3.36E-01	3.36E-01	4.00E+01	**8E-03**	**8E-03**	1.25E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0057H**	**Total Inhalation**	**1E-01**	**1E-01**	**6E-07**
		ND risk contribution	**1E-01**	**1E-01**	**6E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**1E-01**	**1E-01**	**6E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0057H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0057H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0057H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0057H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0057H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0058H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	3.36E-01	3.36E-01	4.00E+01	**8E-03**	**8E-03**	1.25E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0058H**	**Total Inhalation**	**1E-01**	**1E-01**	**6E-07**
		ND risk contribution	**1E-01**	**1E-01**	**6E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**1E-01**	**1E-01**	**6E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0058H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0058H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0058H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0058H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0058H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0059H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	2.20E+02	Y	2.11E+02	2.11E+02	4.00E+01	**5E+00**	**5E+00**	7.85E+01	2.60E-07		**2E-05**
TRICHLOROETHENE	79-01-6	1.24E+01	Y	1.18E+01	1.18E+01	2.00E+00	**6E+00**	**6E+00**	M	4.10E-06	M	**3E-05**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0059H**	**Total Inhalation**	**1E+01**	**1E+01**	**5E-05**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**1E+01**	**1E+01**	**5E-05**
		Site-related only	**1E+01**	**1E+01**	**5E-05**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0059H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	7.00E-02	N	6.71E-02	6.71E-02	NA	---	---	2.49E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	3.60E-01	Y	3.45E-01	3.45E-01	2.00E+00	**2E-01**	**2E-01**	1.28E-01	3.00E-05		**4E-06**
BENZYL CHLORIDE	100-44-7	1.50E-01	N	1.44E-01	1.44E-01	1.00E+00	**1E-01**	**1E-01**	5.34E-02	4.90E-05		**3E-06**
1,4-DIOXANE	123-91-1	4.70E+00	Y	4.51E+00	4.51E+00	3.00E+01	**2E-01**	**2E-01**	1.67E+00	5.00E-06		**8E-06**
1,1,2-TRICHLOROETHANE	79-00-5	4.95E-02	N	4.75E-02	4.75E-02	2.00E-01	**2E-01**	**2E-01**	1.76E-02	1.60E-05		**3E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	4.00E+00	Y	3.84E+00	3.84E+00	2.00E+00	**2E+00**	**2E+00**	1.42E+00	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.10E-01	Y	5.85E-01	5.85E-01	6.00E+01	**1E-02**	**1E-02**	2.17E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.60E-02	N	3.45E-02	3.45E-02	9.00E+00	**4E-03**	**4E-03**	1.28E-02	6.00E-04		**8E-06**
1,2-DICHLOROETHANE	107-06-2	8.60E-02	Y	8.25E-02	8.25E-02	7.00E+00	**1E-02**	**1E-02**	3.06E-02	2.60E-05		**8E-07**
1,2-DICHLOROPROPANE	78-87-5	1.60E+00	Y	1.53E+00	1.53E+00	4.00E+00	**4E-01**	**4E-01**	5.70E-01	3.70E-06		**2E-06**
1,3,5-Trimethylbenzene	108-67-8	1.45E-01	N	1.39E-01	1.39E-01	6.00E+01	**2E-03**	**2E-03**	5.16E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.80E-01	Y	1.73E-01	1.73E-01	8.00E+02	**2E-04**	**2E-04**	6.41E-02	1.10E-05		**7E-07**
BENZENE	71-43-2	1.90E+00	Y	1.82E+00	1.82E+00	3.00E+01	**6E-02**	**6E-02**	6.77E-01	7.80E-06		**5E-06**
BROMODICHLOROMETHANE	75-27-4	2.30E-01	Y	2.21E-01	2.21E-01	NA	---	---	8.19E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	5.00E-01	N	4.79E-01	4.79E-01	5.00E+00	**1E-01**	**1E-01**	1.78E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	1.50E+00	Y	1.44E+00	1.44E+00	1.00E+02	**1E-02**	**1E-02**	5.34E-01	6.00E-06		**3E-06**
CHLOROFORM	67-66-3	1.70E+00	Y	1.63E+00	1.63E+00	9.77E+01	**2E-02**	**2E-02**	6.05E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	7.40E-01	Y	7.10E-01	7.10E-01	1.00E+03	**7E-04**	**7E-04**	2.64E-01	2.50E-06		**7E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.40E+00	Y	4.22E+00	4.22E+00	NA	---	---	1.57E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	8.00E+01	Y	7.67E+01	7.67E+01	2.00E+02	**4E-01**	**4E-01**	2.85E+01	-		**---**
M,P-XYLENE	108-38-3	3.00E+00	Y	2.88E+00	2.88E+00	1.00E+02	**3E-02**	**3E-02**	1.07E+00	-		**---**
METHYLENE CHLORIDE	75-09-2	9.10E-01	Y	8.73E-01	8.73E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**9E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.30E+00	Y	1.25E+00	1.25E+00	1.00E+02	**1E-02**	**1E-02**	4.63E-01	-		**---**
TETRACHLOROETHENE	127-18-4	6.80E-01	Y	6.52E-01	6.52E-01	4.00E+01	**2E-02**	**2E-02**	2.42E-01	2.60E-07		**6E-08**
TRICHLOROETHENE	79-01-6	1.10E-01	N	1.05E-01	1.05E-01	2.00E+00	**5E-02**	**5E-02**	M	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	2.90E-02	N	2.78E-02	2.78E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0059H**	**Total Inhalation**	**4E+00**	**4E+00**	**9E-05**
		ND risk contribution	**5E-01**	**5E-01**	**1E-05**
		Risk for Detects only	**3E+00**	**3E+00**	**8E-05**
		Site-related only	**2E-01**	**2E-01**	**9E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0059H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	5.20E-02	Y	4.99E-02	4.99E-02	7.00E+00	**7E-03**	**7E-03**	1.85E-02	2.60E-05		**5E-07**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	1.15E-02	N	1.10E-02	1.10E-02	8.00E+02	**1E-05**	**1E-05**	4.10E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	8.00E-01	Y	7.67E-01	7.67E-01	3.00E+01	**3E-02**	**3E-02**	2.85E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.20E-01	Y	3.07E-01	3.07E-01	1.00E+02	**3E-03**	**3E-03**	1.14E-01	6.00E-06		**7E-07**
CHLOROFORM	67-66-3	2.70E-01	Y	2.59E-01	2.59E-01	9.77E+01	**3E-03**	**3E-03**	9.62E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	3.10E+00	Y	2.97E+00	2.97E+00	7.00E+01	**4E-02**	**4E-02**	1.10E+00	-		---
ETHYLBENZENE	100-41-4	5.40E-01	Y	5.18E-01	5.18E-01	1.00E+03	**5E-04**	**5E-04**	1.92E-01	2.50E-06		**5E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	2.00E+00	Y	1.92E+00	1.92E+00	1.00E+02	**2E-02**	**2E-02**	7.12E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	1.00E-01	Y	9.59E-02	9.59E-02	3.00E+00	**3E-02**	**3E-02**	3.56E-02	3.40E-05		**1E-06**
O-XYLENE	95-47-6	8.40E-01	Y	8.05E-01	8.05E-01	1.00E+02	**8E-03**	**8E-03**	2.99E-01	-		---
TETRACHLOROETHENE	127-18-4	1.60E-01	Y	1.53E-01	1.53E-01	4.00E+01	**4E-03**	**4E-03**	5.70E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	2.60E-02	Y	2.49E-02	2.49E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**5E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0059H**	**Total Inhalation**	**2E-01**	**2E-01**	**7E-06**
		Based on NDs only	**1E-05**	**1E-05**	**5E-08**
		Based on Detects only	**2E-01**	**2E-01**	**7E-06**
		Site-related only	**2E-02**	**2E-02**	**7E-08**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0059H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.24E+01	3.38E+00	2.03E+00	5.08E+00	1.69E+00	1.0E-06	kidney	3E-06	2E-06	5E-06	2E-06	**1E-05**
TRICHLOROETHENE	79-01-6	1.24E+01	1.02E+00		3.38E+00		3.1E-06	NHL+liver	3E-06		1E-05		**1E-05**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.10E-01	2.49E-01	1.50E-01	3.74E-01	1.25E-01	1.0E-08		2E-09	1E-09	4E-09	1E-09	**9E-09**
TRICHLOROETHENE	79-01-6	1.10E-01	3.01E-02	1.81E-02	4.52E-02	1.51E-02	1.0E-06	kidney	3E-08	2E-08	5E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.10E-01	9.04E-03		3.01E-02		3.1E-06	NHL+liver	3E-08		9E-08		**1E-07**
VINYL CHLORIDE	75-01-4	2.90E-02	7.95E-03	4.77E-03	1.19E-02	3.97E-03	4.4E-06		3E-08	2E-08	5E-08	2E-08	**1E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.60E-02	7.12E-03	4.27E-03	1.07E-02	3.56E-03	1.0E-06	kidney	7E-09	4E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.60E-02	2.14E-03		7.12E-03		3.1E-06	NHL+liver	7E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0060H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	3.36E-01	3.36E-01	4.00E+01	**8E-03**	**8E-03**	1.25E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0060H**	**Total Inhalation**	**1E-01**	**1E-01**	**6E-07**
		ND risk contribution	**1E-01**	**1E-01**	**6E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**1E-01**	**1E-01**	**6E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0060H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0060H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0060H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0060H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0060H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0061H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	3.36E-01	3.36E-01	4.00E+01	**8E-03**	**8E-03**	1.25E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0061H**	**Total Inhalation**	**1E-01**	**1E-01**	**6E-07**
		ND risk contribution	**1E-01**	**1E-01**	**6E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**1E-01**	**1E-01**	**6E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0061H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0061H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0061H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0061H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0061H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0062H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	3.36E-01	3.36E-01	4.00E+01	**8E-03**	**8E-03**	1.25E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0062H**	**Total Inhalation**	**1E-01**	**1E-01**	**6E-07**
		ND risk contribution	**1E-01**	**1E-01**	**6E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**1E-01**	**1E-01**	**6E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0062H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	1.01E-02	1.01E-02	NA	---	---	3.74E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	4.95E-02	N	4.75E-02	4.75E-02	2.00E+00	**2E-02**	**2E-02**	1.76E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	8.15E-02	8.15E-02	1.00E+00	**8E-02**	**8E-02**	3.03E-02	4.90E-05		**1E-06**
1,4-DIOXANE	123-91-1	7.00E-02	N	6.71E-02	6.71E-02	3.00E+01	**2E-03**	**2E-03**	2.49E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	6.71E-03	6.71E-03	2.00E-01	**3E-02**	**3E-02**	2.49E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.85E-01	N	4.65E-01	4.65E-01	2.00E+00	**2E-01**	**2E-01**	1.73E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	2.40E-01	Y	2.30E-01	2.30E-01	6.00E+01	**4E-03**	**4E-03**	8.55E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	3.16E-02	3.16E-02	9.00E+00	**4E-03**	**4E-03**	1.18E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	1.70E-01	Y	1.63E-01	1.63E-01	7.00E+00	**2E-02**	**2E-02**	6.05E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	8.63E-02	8.63E-02	4.00E+00	**2E-02**	**2E-02**	3.21E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	5.75E-02	5.75E-02	6.00E+01	**1E-03**	**1E-03**	2.14E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	4.79E-02	4.79E-02	8.00E+02	**6E-05**	**6E-05**	1.78E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	1.00E+00	Y	9.59E-01	9.59E-01	3.00E+01	**3E-02**	**3E-02**	3.56E-01	7.80E-06		**3E-06**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	1.20E-01	1.20E-01	NA	---	---	4.45E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	6.50E-01	N	6.23E-01	6.23E-01	5.00E+00	**1E-01**	**1E-01**	2.32E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	3.84E-01	3.84E-01	1.00E+02	**4E-03**	**4E-03**	1.42E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	3.40E-01	Y	3.26E-01	3.26E-01	9.77E+01	**3E-03**	**3E-03**	1.21E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	3.00E-01	Y	2.88E-01	2.88E-01	1.00E+03	**3E-04**	**3E-04**	1.07E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	6.23E-01	6.23E-01	NA	---	---	2.32E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.80E+01	Y	1.73E+01	1.73E+01	2.00E+02	**9E-02**	**9E-02**	6.41E+00	-		**---**
M,P-XYLENE	108-38-3	1.10E+00	Y	1.05E+00	1.05E+00	1.00E+02	**1E-02**	**1E-02**	3.92E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	2.65E-01	N	2.54E-01	2.54E-01	6.00E+02	**4E-04**	**4E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	3.60E-01	Y	3.45E-01	3.45E-01	1.00E+02	**3E-03**	**3E-03**	1.28E-01	-		**---**
TETRACHLOROETHENE	127-18-4	5.00E-02	Y	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	1.65E-02	N	1.58E-02	1.58E-02	2.00E+00	**8E-03**	**8E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	8.00E-03	N	7.67E-03	7.67E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0062H**	**Total Inhalation**	**7E-01**	**7E-01**	**2E-05**
		ND risk contribution	**5E-01**	**5E-01**	**2E-05**
		Risk for Detects only	**2E-01**	**2E-01**	**8E-06**
		Site-related only	**1E-02**	**1E-02**	**2E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0062H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0062H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0062H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.65E-01	7.26E-02	4.36E-02	1.09E-01	3.63E-02	1.0E-08		7E-10	4E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.65E-02	4.52E-03	2.71E-03	6.78E-03	2.26E-03	1.0E-06	kidney	5E-09	3E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.65E-02	1.36E-03		4.52E-03		3.1E-06	NHL+liver	4E-09		1E-08		**2E-08**
VINYL CHLORIDE	75-01-4	8.00E-03	2.19E-03	1.32E-03	3.29E-03	1.10E-03	4.4E-06		1E-08	6E-09	1E-08	5E-09	**3E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0063H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	4.00E+00	Y	3.84E+00	3.84E+00	4.00E+01	**1E-01**	**1E-01**	1.42E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0063H**	**Total Inhalation**	**2E-01**	**2E-01**	**9E-07**
		ND risk contribution	**1E-01**	**1E-01**	**5E-07**
		Risk for Detects only	**1E-01**	**1E-01**	**4E-07**
		Site-related only	**2E-01**	**2E-01**	**9E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0063H**

Pathway:

Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0063H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0063H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0063H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0063H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0064H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR ($ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	2.51E+00	Y	2.41E+00	2.41E+00	4.00E+01	**6E-02**	**6E-02**	8.94E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	N	2.40E-01	2.40E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0064H**	**Total Inhalation**	**2E-01**	**2E-01**	**8E-07**
		ND risk contribution	**1E-01**	**1E-01**	**5E-07**
		Risk for Detects only	**6E-02**	**6E-02**	**2E-07**
		Site-related only	**2E-01**	**2E-01**	**8E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0064H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.15E-01	N	4.93E-01	4.93E-01	NA	---	---	1.83E-01	5.80E-05		**1E-05**
1,3-BUTADIENE	106-99-0	1.66E-01	N	1.59E-01	1.59E-01	2.00E+00	**8E-02**	**8E-02**	5.91E-02	3.00E-05		**2E-06**
BENZYL CHLORIDE	100-44-7	9.57E-01	N	9.18E-01	9.18E-01	1.00E+00	**9E-01**	**9E-01**	3.41E-01	4.90E-05		**2E-05**
1,4-DIOXANE	123-91-1	5.10E-01	Y	4.89E-01	4.89E-01	3.00E+01	**2E-02**	**2E-02**	1.82E-01	5.00E-06		**9E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.10E-01	N	3.93E-01	3.93E-01	2.00E-01	**2E+00**	**2E+00**	1.46E-01	1.60E-05		**2E-06**
1,2,4-TRICHLOROBENZENE	120-82-1	1.56E+00	N	1.49E+00	1.49E+00	2.00E+00	**7E-01**	**7E-01**	5.55E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E-01	Y	1.15E-01	1.15E-01	6.00E+01	**2E-03**	**2E-03**	4.27E-02	-		---
1,2-DIBROMOETHANE	106-93-4	6.00E-01	N	5.75E-01	5.75E-01	9.00E+00	**6E-02**	**6E-02**	2.14E-01	6.00E-04		**1E-04**
1,2-DICHLOROETHANE	107-06-2	7.50E-02	Y	7.19E-02	7.19E-02	7.00E+00	**1E-02**	**1E-02**	2.67E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	3.65E-01	N	3.50E-01	3.50E-01	4.00E+00	**9E-02**	**9E-02**	1.30E-01	3.70E-06		**5E-07**
1,3,5-Trimethylbenzene	108-67-8	7.50E-01	N	7.19E-01	7.19E-01	6.00E+01	**1E-02**	**1E-02**	2.67E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	9.01E-01	N	8.64E-01	8.64E-01	8.00E+02	**1E-03**	**1E-03**	3.21E-01	1.10E-05		**4E-06**
BENZENE	71-43-2	6.07E-01	Y	5.82E-01	5.82E-01	3.00E+01	**2E-02**	**2E-02**	2.16E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	5.02E-01	N	4.82E-01	4.82E-01	NA	---	---	1.79E-01	3.70E-05		**7E-06**
BROMOMETHANE	74-83-9	5.50E-01	N	5.27E-01	5.27E-01	5.00E+00	**1E-01**	**1E-01**	1.96E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	3.84E-01	3.84E-01	1.00E+02	**4E-03**	**4E-03**	1.42E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	7.60E-01	Y	7.29E-01	7.29E-01	9.77E+01	**7E-03**	**7E-03**	2.71E-01	2.30E-05		**6E-06**
ETHYL ACETATE	141-78-6	2.90E+00	Y	2.78E+00	2.78E+00	7.00E+01	**4E-02**	**4E-02**	1.03E+00	-		---
ETHYLBENZENE	100-41-4	1.70E+00	Y	1.63E+00	1.63E+00	1.00E+03	**2E-03**	**2E-03**	6.05E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.60E+00	N	1.53E+00	1.53E+00	NA	---	---	5.70E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.00E+01	Y	9.59E+00	9.59E+00	2.00E+02	**5E-02**	**5E-02**	3.56E+00	-		---
M,P-XYLENE	108-38-3	5.65E+00	Y	5.42E+00	5.42E+00	1.00E+02	**5E-02**	**5E-02**	2.01E+00	-		---
METHYLENE CHLORIDE	75-09-2	1.10E+00	Y	1.05E+00	1.05E+00	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**1E-08**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.52E+00	Y	1.46E+00	1.46E+00	1.00E+02	**1E-02**	**1E-02**	5.41E-01	-		---
TETRACHLOROETHENE	127-18-4	1.30E+01	Y	1.25E+01	1.25E+01	4.00E+01	**3E-01**	**3E-01**	4.63E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	1.50E-01	Y	1.44E-01	1.44E-01	2.00E+00	**7E-02**	**7E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	3.52E-01	N	3.37E-01	3.37E-01	2.00E+02	**2E-03**	**2E-03**	1.25E-01	-		---
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0064H**	**Total Inhalation**	**5E+00**	**5E+00**	**2E-04**
		ND risk contribution	**4E+00**	**4E+00**	**2E-04**
		Risk for Detects only	**6E-01**	**6E-01**	**1E-05**
		Site-related only	**4E-01**	**4E-01**	**3E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0064H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0064H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0064H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.50E-01	2.05E-02		6.85E-02		3.1E-06	NHL+liver	6E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.10E+00	3.01E-01	1.81E-01	4.52E-01	1.51E-01	1.0E-08		3E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.50E-01	4.11E-02	2.47E-02	6.16E-02	2.05E-02	1.0E-06	kidney	4E-08	2E-08	6E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.50E-01	1.23E-02		4.11E-02		3.1E-06	NHL+liver	4E-08		1E-07		**2E-07**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0065H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	N	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0065H**	**Total Inhalation**	**3E-02**	**3E-02**	**1E-07**
		ND risk contribution	**3E-02**	**3E-02**	**1E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0065H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	5.50E-02	N	5.27E-02	5.27E-02	NA	---	---	1.96E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	6.00E-02	N	5.75E-02	5.75E-02	2.00E+00	**3E-02**	**3E-02**	2.14E-02	3.00E-05		**6E-07**
BENZYL CHLORIDE	100-44-7	1.25E-01	N	1.20E-01	1.20E-01	1.00E+00	**1E-01**	**1E-01**	4.45E-02	4.90E-05		**2E-06**
1,4-DIOXANE	123-91-1	2.35E-01	N	2.25E-01	2.25E-01	3.00E+01	**8E-03**	**8E-03**	8.37E-02	5.00E-06		**4E-07**
1,1,2-TRICHLOROETHANE	79-00-5	4.05E-02	N	3.88E-02	3.88E-02	2.00E-01	**2E-01**	**2E-01**	1.44E-02	1.60E-05		**2E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.65E+00	N	1.58E+00	1.58E+00	2.00E+00	**8E-01**	**8E-01**	5.88E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.50E-01	Y	4.32E-01	4.32E-01	6.00E+01	**7E-03**	**7E-03**	1.60E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	2.95E-02	N	2.83E-02	2.83E-02	9.00E+00	**3E-03**	**3E-03**	1.05E-02	6.00E-04		**6E-06**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	7.38E-02	7.38E-02	7.00E+00	**1E-02**	**1E-02**	2.74E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	1.35E-01	N	1.29E-01	1.29E-01	4.00E+00	**3E-02**	**3E-02**	4.81E-02	3.70E-06		**2E-07**
1,3,5-Trimethylbenzene	108-67-8	1.20E-01	N	1.15E-01	1.15E-01	6.00E+01	**2E-03**	**2E-03**	4.27E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	N	8.15E-02	8.15E-02	8.00E+02	**1E-04**	**1E-04**	3.03E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	8.60E-01	Y	8.25E-01	8.25E-01	3.00E+01	**3E-02**	**3E-02**	3.06E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	2.95E-01	N	2.83E-01	2.83E-01	NA	---	---	1.05E-01	3.70E-05		**4E-06**
BROMOMETHANE	74-83-9	4.15E-01	N	3.98E-01	3.98E-01	5.00E+00	**8E-02**	**8E-02**	1.48E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.40E-01	Y	5.18E-01	5.18E-01	1.00E+02	**5E-03**	**5E-03**	1.92E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	6.70E-01	Y	6.42E-01	6.42E-01	9.77E+01	**7E-03**	**7E-03**	2.39E-01	2.30E-05		**5E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	3.60E-01	Y	3.45E-01	3.45E-01	1.00E+03	**3E-04**	**3E-04**	1.28E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	2.20E+00	N	2.11E+00	2.11E+00	NA	---	---	7.84E-01	2.20E-05		**2E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.00E+01	Y	9.59E+00	9.59E+00	2.00E+02	**5E-02**	**5E-02**	3.56E+00	-		**---**
M,P-XYLENE	108-38-3	1.40E+00	Y	1.34E+00	1.34E+00	1.00E+02	**1E-02**	**1E-02**	4.99E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	6.20E-01	Y	5.95E-01	5.95E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**6E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	4.60E-01	Y	4.41E-01	4.41E-01	1.00E+02	**4E-03**	**4E-03**	1.64E-01	-		**---**
TETRACHLOROETHENE	127-18-4	2.20E-01	Y	2.11E-01	2.11E-01	4.00E+01	**5E-03**	**5E-03**	7.84E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	9.00E-02	N	8.63E-02	8.63E-02	2.00E+00	**4E-02**	**4E-02**	M	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	2.40E-02	N	2.30E-02	2.30E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0065H**	**Total Inhalation**	**1E+00**	**1E+00**	**4E-05**
		ND risk contribution	**1E+00**	**1E+00**	**3E-05**
		Risk for Detects only	**1E-01**	**1E-01**	**1E-05**
		Site-related only	**6E-02**	**6E-02**	**7E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0065H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	5.70E-02	Y	5.47E-02	5.47E-02	7.00E+00	**8E-03**	**8E-03**	2.03E-02	2.60E-05		**5E-07**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	1.75E-02	N	1.68E-02	1.68E-02	8.00E+02	**2E-05**	**2E-05**	6.23E-03	1.10E-05		**7E-08**
BENZENE	71-43-2	7.60E-01	Y	7.29E-01	7.29E-01	3.00E+01	**2E-02**	**2E-02**	2.71E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	4.12E-01	4.12E-01	1.00E+02	**4E-03**	**4E-03**	1.53E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	3.60E-01	Y	3.45E-01	3.45E-01	9.77E+01	**4E-03**	**4E-03**	1.28E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	2.00E+00	Y	1.92E+00	1.92E+00	7.00E+01	**3E-02**	**3E-02**	7.12E-01	-		---
ETHYLBENZENE	100-41-4	2.60E-01	Y	2.49E-01	2.49E-01	1.00E+03	**2E-04**	**2E-04**	9.26E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	9.60E-01	Y	9.21E-01	9.21E-01	1.00E+02	**9E-03**	**9E-03**	3.42E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	4.50E-02	Y	4.32E-02	4.32E-02	3.00E+00	**1E-02**	**1E-02**	1.60E-02	3.40E-05		**5E-07**
O-XYLENE	95-47-6	3.00E-01	Y	2.88E-01	2.88E-01	1.00E+02	**3E-03**	**3E-03**	1.07E-01	-		---
TETRACHLOROETHENE	127-18-4	1.20E-01	Y	1.15E-01	1.15E-01	4.00E+01	**3E-03**	**3E-03**	4.27E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	9.50E-03	N	9.11E-03	9.11E-03	2.00E+00	**5E-03**	**5E-03**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0065H**	**Total Inhalation**	**1E-01**	**1E-01**	**7E-06**
		Based on NDs only	**5E-03**	**5E-03**	**9E-08**
		Based on Detects only	**1E-01**	**1E-01**	**7E-06**
		Site-related only	**7E-03**	**7E-03**	**3E-08**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0065H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.20E-01	1.70E-01	1.02E-01	2.55E-01	8.49E-02	1.0E-08		2E-09	1E-09	3E-09	8E-10	**6E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	2.47E-02	1.48E-02	3.70E-02	1.23E-02	1.0E-06	kidney	2E-08	1E-08	4E-08	1E-08	**9E-08**
TRICHLOROETHENE	79-01-6	9.00E-02	7.40E-03		2.47E-02		3.1E-06	NHL+liver	2E-08		8E-08		**1E-07**
VINYL CHLORIDE	75-01-4	2.40E-02	6.58E-03	3.95E-03	9.86E-03	3.29E-03	4.4E-06		3E-08	2E-08	4E-08	1E-08	**1E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-03	2.60E-03	1.56E-03	3.90E-03	1.30E-03	1.0E-06	kidney	3E-09	2E-09	4E-09	1E-09	**9E-09**
TRICHLOROETHENE	79-01-6	9.50E-03	7.81E-04		2.60E-03		3.1E-06	NHL+liver	2E-09		8E-09		**1E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0066H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01		TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	5.00E-02	N	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07	**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M **1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0066H**	**Total Inhalation**	**3E-02**	**3E-02**	**1E-07**
		ND risk contribution	**3E-02**	**3E-02**	**1E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0066H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.25E-02	N	2.16E-02	2.16E-02	NA	---	---	8.01E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	1.00E-01	N	9.59E-02	9.59E-02	2.00E+00	**5E-02**	**5E-02**	3.56E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	2.50E-01	N	2.40E-01	2.40E-01	1.00E+00	**2E-01**	**2E-01**	8.90E-02	4.90E-05		**4E-06**
1,4-DIOXANE	123-91-1	4.30E-01	Y	4.12E-01	4.12E-01	3.00E+01	**1E-02**	**1E-02**	1.53E-01	5.00E-06		**8E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.10E-02	N	2.01E-02	2.01E-02	2.00E-01	**1E-01**	**1E-01**	7.48E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	6.71E-01	6.71E-01	2.00E+00	**3E-01**	**3E-01**	2.49E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.30E-01	Y	4.12E-01	4.12E-01	6.00E+01	**7E-03**	**7E-03**	1.53E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	7.19E-02	7.19E-02	9.00E+00	**8E-03**	**8E-03**	2.67E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	3.50E-01	Y	3.36E-01	3.36E-01	7.00E+00	**5E-02**	**5E-02**	1.25E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	1.01E-01	1.01E-01	4.00E+00	**3E-02**	**3E-02**	3.74E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	1.25E-01	1.25E-01	6.00E+01	**2E-03**	**2E-03**	4.63E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	N	8.15E-02	8.15E-02	8.00E+02	**1E-04**	**1E-04**	3.03E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	9.90E-01	Y	9.49E-01	9.49E-01	3.00E+01	**3E-02**	**3E-02**	3.53E-01	7.80E-06		**3E-06**
BROMODICHLOROMETHANE	75-27-4	2.55E-01	N	2.45E-01	2.45E-01	NA	---	---	9.08E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	8.50E-01	N	8.15E-01	8.15E-01	5.00E+00	**2E-01**	**2E-01**	3.03E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	4.41E-01	4.41E-01	1.00E+02	**4E-03**	**4E-03**	1.64E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	5.00E-01	Y	4.79E-01	4.79E-01	9.77E+01	**5E-03**	**5E-03**	1.78E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	5.10E-01	Y	4.89E-01	4.89E-01	1.00E+03	**5E-04**	**5E-04**	1.82E-01	2.50E-06		**5E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	7.67E-01	7.67E-01	NA	---	---	2.85E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.10E+01	Y	1.05E+01	1.05E+01	2.00E+02	**5E-02**	**5E-02**	3.92E+00	-		**---**
M,P-XYLENE	108-38-3	1.50E+00	Y	1.44E+00	1.44E+00	1.00E+02	**1E-02**	**1E-02**	5.34E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.35E-01	N	3.21E-01	3.21E-01	6.00E+02	**5E-04**	**5E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	3.70E-01	Y	3.55E-01	3.55E-01	1.00E+02	**4E-03**	**4E-03**	1.32E-01	-		**---**
TETRACHLOROETHENE	127-18-4	9.40E-02	Y	9.01E-02	9.01E-02	4.00E+01	**2E-03**	**2E-03**	3.35E-02	2.60E-07		**9E-09**
TRICHLOROETHENE	79-01-6	1.40E-01	Y	1.34E-01	1.34E-01	2.00E+00	**7E-02**	**7E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	7.00E-03	N	6.71E-03	6.71E-03	8.00E+01	**8E-05**	**8E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0066H**	**Total Inhalation**	**1E+00**	**1E+00**	**4E-05**
		ND risk contribution	**9E-01**	**9E-01**	**3E-05**
		Risk for Detects only	**3E-01**	**3E-01**	**1E-05**
		Site-related only	**8E-02**	**8E-02**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0066H**

Pathway:

Inhalation of Indoor Air (Passive)

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	2.30E-01	Y	2.21E-01	2.21E-01	7.00E+00	**3E-02**	**3E-02**	8.19E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	1.20E-02	N	1.15E-02	1.15E-02	8.00E+02	**1E-05**	**1E-05**	4.27E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	4.80E-01	Y	4.60E-01	4.60E-01	3.00E+01	**2E-02**	**2E-02**	1.71E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.10E-01	Y	2.97E-01	2.97E-01	1.00E+02	**3E-03**	**3E-03**	1.10E-01	6.00E-06		**7E-07**
CHLOROFORM	67-66-3	6.30E-01	Y	6.04E-01	6.04E-01	9.77E+01	**6E-03**	**6E-03**	2.24E-01	2.30E-05		**5E-06**
ETHYL ACETATE	141-78-6	6.70E+00	Y	6.42E+00	6.42E+00	7.00E+01	**9E-02**	**9E-02**	2.39E+00	-		---
ETHYLBENZENE	100-41-4	2.40E-01	Y	2.30E-01	2.30E-01	1.00E+03	**2E-04**	**2E-04**	8.55E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	7.20E-01	Y	6.90E-01	6.90E-01	1.00E+02	**7E-03**	**7E-03**	2.56E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	2.55E-02	N	2.45E-02	2.45E-02	3.00E+00	**8E-03**	**8E-03**	9.08E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	2.60E-01	Y	2.49E-01	2.49E-01	1.00E+02	**2E-03**	**2E-03**	9.26E-02	-		---
TETRACHLOROETHENE	127-18-4	6.80E-02	Y	6.52E-02	6.52E-02	4.00E+01	**2E-03**	**2E-03**	2.42E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	1.90E-01	Y	1.82E-01	1.82E-01	2.00E+00	**9E-02**	**9E-02**	M	4.10E-06	M	**4E-07**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0066H**	**Total Inhalation**	**3E-01**	**3E-01**	**1E-05**
		Based on NDs only	**8E-03**	**8E-03**	**4E-07**
		Based on Detects only	**3E-01**	**3E-01**	**1E-05**
		Site-related only	**9E-02**	**9E-02**	**4E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0066H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.35E-01	9.18E-02	5.51E-02	1.38E-01	4.59E-02	1.0E-08		9E-10	6E-10	1E-09	5E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.40E-01	3.84E-02	2.30E-02	5.75E-02	1.92E-02	1.0E-06	kidney	4E-08	2E-08	6E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.40E-01	1.15E-02		3.84E-02		3.1E-06	NHL+liver	4E-08		1E-07		**2E-07**
VINYL CHLORIDE	75-01-4	7.00E-03	1.92E-03	1.15E-03	2.88E-03	9.59E-04	4.4E-06		8E-09	5E-09	1E-08	4E-09	**3E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.90E-01	5.21E-02	3.12E-02	7.81E-02	2.60E-02	1.0E-06	kidney	5E-08	3E-08	8E-08	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	1.90E-01	1.56E-02		5.21E-02		3.1E-06	NHL+liver	5E-08		2E-07		**2E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0069H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	N	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0069H**	**Total Inhalation**	**3E-02**	**3E-02**	**1E-07**
		ND risk contribution	**3E-02**	**3E-02**	**1E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0069H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	3.00E-02	N	2.88E-02	2.88E-02	NA	---	---	1.07E-02	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	1.35E-01	N	1.29E-01	1.29E-01	2.00E+00	**6E-02**	**6E-02**	4.81E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	3.40E-01	N	3.26E-01	3.26E-01	1.00E+00	**3E-01**	**3E-01**	1.21E-01	4.90E-05		**6E-06**
1,4-DIOXANE	123-91-1	2.90E-01	Y	2.78E-01	2.78E-01	3.00E+01	**9E-03**	**9E-03**	1.03E-01	5.00E-06		**5E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.80E-02	N	2.68E-02	2.68E-02	2.00E-01	**1E-01**	**1E-01**	9.97E-03	1.60E-05		**2E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	9.00E-01	N	8.63E-01	8.63E-01	2.00E+00	**4E-01**	**4E-01**	3.21E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	8.30E-01	Y	7.96E-01	7.96E-01	6.00E+01	**1E-02**	**1E-02**	2.96E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	1.00E-01	N	9.59E-02	9.59E-02	9.00E+00	**1E-02**	**1E-02**	3.56E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.40E+00	Y	1.34E+00	1.34E+00	7.00E+00	**2E-01**	**2E-01**	4.99E-01	2.60E-05		**1E-05**
1,2-DICHLOROPROPANE	78-87-5	1.40E-01	N	1.34E-01	1.34E-01	4.00E+00	**3E-02**	**3E-02**	4.99E-02	3.70E-06		**2E-07**
1,3,5-Trimethylbenzene	108-67-8	1.70E-01	N	1.63E-01	1.63E-01	6.00E+01	**3E-03**	**3E-03**	6.05E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.10E-01	N	1.05E-01	1.05E-01	8.00E+02	**1E-04**	**1E-04**	3.92E-02	1.10E-05		**4E-07**
BENZENE	71-43-2	8.40E-01	Y	8.05E-01	8.05E-01	3.00E+01	**3E-02**	**3E-02**	2.99E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	3.45E-01	N	3.31E-01	3.31E-01	NA	---	---	1.23E-01	3.70E-05		**5E-06**
BROMOMETHANE	74-83-9	1.15E+00	N	1.10E+00	1.10E+00	5.00E+00	**2E-01**	**2E-01**	4.10E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	4.22E-01	4.22E-01	1.00E+02	**4E-03**	**4E-03**	1.57E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	6.00E-01	Y	5.75E-01	5.75E-01	9.77E+01	**6E-03**	**6E-03**	2.14E-01	2.30E-05		**5E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.30E-01	Y	2.21E-01	2.21E-01	1.00E+03	**2E-04**	**2E-04**	8.19E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.10E+00	N	1.05E+00	1.05E+00	NA	---	---	3.92E-01	2.20E-05		**9E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	4.60E+00	Y	4.41E+00	4.41E+00	2.00E+02	**2E-02**	**2E-02**	1.64E+00	-		**---**
M,P-XYLENE	108-38-3	8.70E-01	Y	8.34E-01	8.34E-01	1.00E+02	**8E-03**	**8E-03**	3.10E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	7.90E-01	Y	7.58E-01	7.58E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**8E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	3.60E-01	Y	3.45E-01	3.45E-01	1.00E+02	**3E-03**	**3E-03**	1.28E-01	-		**---**
TETRACHLOROETHENE	127-18-4	3.40E-01	Y	3.26E-01	3.26E-01	4.00E+01	**8E-03**	**8E-03**	1.21E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	1.30E-01	Y	1.25E-01	1.25E-01	2.00E+00	**6E-02**	**6E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	9.00E-03	N	8.63E-03	8.63E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**4E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0069H**	**Total Inhalation**	**2E+00**	**2E+00**	**7E-05**
		ND risk contribution	**1E+00**	**1E+00**	**4E-05**
		Risk for Detects only	**4E-01**	**4E-01**	**2E-05**
		Site-related only	**8E-02**	**8E-02**	**9E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0069H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	6.10E-01	Y	5.85E-01	5.85E-01	7.00E+00	**8E-02**	**8E-02**	2.17E-01	2.60E-05		**6E-06**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	Y	8.15E-02	8.15E-02	8.00E+02	**1E-04**	**1E-04**	3.03E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	3.90E-01	Y	3.74E-01	3.74E-01	3.00E+01	**1E-02**	**1E-02**	1.39E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.20E-01	Y	3.07E-01	3.07E-01	1.00E+02	**3E-03**	**3E-03**	1.14E-01	6.00E-06		**7E-07**
CHLOROFORM	67-66-3	5.30E-01	Y	5.08E-01	5.08E-01	9.77E+01	**5E-03**	**5E-03**	1.89E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	1.10E+00	Y	1.05E+00	1.05E+00	7.00E+01	**2E-02**	**2E-02**	3.92E-01	-		---
ETHYLBENZENE	100-41-4	1.60E-01	Y	1.53E-01	1.53E-01	1.00E+03	**2E-04**	**2E-04**	5.70E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	6.10E-01	Y	5.85E-01	5.85E-01	1.00E+02	**6E-03**	**6E-03**	2.17E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	2.70E-02	N	2.59E-02	2.59E-02	3.00E+00	**9E-03**	**9E-03**	9.62E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	2.20E-01	Y	2.11E-01	2.11E-01	1.00E+02	**2E-03**	**2E-03**	7.84E-02	-		---
TETRACHLOROETHENE	127-18-4	1.20E-01	Y	1.15E-01	1.15E-01	4.00E+01	**3E-03**	**3E-03**	4.27E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	1.05E-02	N	1.01E-02	1.01E-02	2.00E+00	**5E-03**	**5E-03**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0069H**	**Total Inhalation**	**1E-01**	**1E-01**	**1E-05**
		Based on NDs only	**1E-02**	**1E-02**	**3E-07**
		Based on Detects only	**1E-01**	**1E-01**	**1E-05**
		Site-related only	**8E-03**	**8E-03**	**3E-08**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0069H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.90E-01	2.16E-01	1.30E-01	3.25E-01	1.08E-01	1.0E-08		2E-09	1E-09	3E-09	1E-09	**8E-09**
TRICHLOROETHENE	79-01-6	1.30E-01	3.56E-02	2.14E-02	5.34E-02	1.78E-02	1.0E-06	kidney	4E-08	2E-08	5E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.30E-01	1.07E-02		3.56E-02		3.1E-06	NHL+liver	3E-08		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	9.00E-03	2.47E-03	1.48E-03	3.70E-03	1.23E-03	4.4E-06		1E-08	7E-09	2E-08	5E-09	**4E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.05E-02	2.88E-03	1.73E-03	4.32E-03	1.44E-03	1.0E-06	kidney	3E-09	2E-09	4E-09	1E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.05E-02	8.63E-04		2.88E-03		3.1E-06	NHL+liver	3E-09		9E-09		**1E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0071H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	N	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0071H**	**Total Inhalation**	**3E-02**	**3E-02**	**1E-07**
		ND risk contribution	**3E-02**	**3E-02**	**1E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0071H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	2.06E-02	2.06E-02	NA	---	---	7.66E-03	5.80E-05		**4E-07**
1,3-BUTADIENE	106-99-0	9.50E-02	N	9.11E-02	9.11E-02	2.00E+00	**5E-02**	**5E-02**	3.38E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	2.40E-01	N	2.30E-01	2.30E-01	1.00E+00	**2E-01**	**2E-01**	8.55E-02	4.90E-05		**4E-06**
1,4-DIOXANE	123-91-1	6.00E-02	N	5.75E-02	5.75E-02	3.00E+01	**2E-03**	**2E-03**	2.14E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	1.92E-02	1.92E-02	2.00E-01	**1E-01**	**1E-01**	7.12E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	6.23E-01	6.23E-01	2.00E+00	**3E-01**	**3E-01**	2.32E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E-01	N	1.34E-01	1.34E-01	6.00E+01	**2E-03**	**2E-03**	4.99E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	6.71E-02	6.71E-02	9.00E+00	**7E-03**	**7E-03**	2.49E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	8.00E-01	Y	7.67E-01	7.67E-01	7.00E+00	**1E-01**	**1E-01**	2.85E-01	2.60E-05		**7E-06**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	9.59E-02	9.59E-02	4.00E+00	**2E-02**	**2E-02**	3.56E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.20E-01	N	1.15E-01	1.15E-01	6.00E+01	**2E-03**	**2E-03**	4.27E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	7.67E-02	7.67E-02	8.00E+02	**1E-04**	**1E-04**	2.85E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	6.50E-01	Y	6.23E-01	6.23E-01	3.00E+01	**2E-02**	**2E-02**	2.32E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	2.45E-01	N	2.35E-01	2.35E-01	NA	---	---	8.73E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	7.67E-01	7.67E-01	5.00E+00	**2E-01**	**2E-01**	2.85E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	4.41E-01	4.41E-01	1.00E+02	**4E-03**	**4E-03**	1.64E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.60E+00	Y	1.53E+00	1.53E+00	9.77E+01	**2E-02**	**2E-02**	5.70E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	3.00E-01	Y	2.88E-01	2.88E-01	1.00E+03	**3E-04**	**3E-04**	1.07E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	7.67E-01	7.67E-01	NA	---	---	2.85E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	4.30E+00	Y	4.12E+00	4.12E+00	2.00E+02	**2E-02**	**2E-02**	1.53E+00	-		**---**
M,P-XYLENE	108-38-3	8.50E-01	Y	8.15E-01	8.15E-01	1.00E+02	**8E-03**	**8E-03**	3.03E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.15E-01	N	3.02E-01	3.02E-01	6.00E+02	**5E-04**	**5E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	3.00E-01	Y	2.88E-01	2.88E-01	1.00E+02	**3E-03**	**3E-03**	1.07E-01	-		**---**
TETRACHLOROETHENE	127-18-4	3.30E-01	Y	3.16E-01	3.16E-01	4.00E+01	**8E-03**	**8E-03**	1.18E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.85E-02	N	2.73E-02	2.73E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-03	N	6.23E-03	6.23E-03	8.00E+01	**8E-05**	**8E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0071H**	**Total Inhalation**	**1E+00**	**1E+00**	**5E-05**
		ND risk contribution	**9E-01**	**9E-01**	**3E-05**
		Risk for Detects only	**2E-01**	**2E-01**	**2E-05**
		Site-related only	**2E-02**	**2E-02**	**2E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0071H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	7.70E-01	Y	7.38E-01	7.38E-01	7.00E+00	**1E-01**	**1E-01**	2.74E-01	2.60E-05		**7E-06**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	1.30E-02	N	1.25E-02	1.25E-02	8.00E+02	**2E-05**	**2E-05**	4.63E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	4.10E-01	Y	3.93E-01	3.93E-01	3.00E+01	**1E-02**	**1E-02**	1.46E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	2.80E-01	Y	2.68E-01	2.68E-01	1.00E+02	**3E-03**	**3E-03**	9.97E-02	6.00E-06		**6E-07**
CHLOROFORM	67-66-3	5.80E-01	Y	5.56E-01	5.56E-01	9.77E+01	**6E-03**	**6E-03**	2.07E-01	2.30E-05		**5E-06**
ETHYL ACETATE	141-78-6	2.60E+01	Y	2.49E+01	2.49E+01	7.00E+01	**4E-01**	**4E-01**	9.26E+00	-		---
ETHYLBENZENE	100-41-4	2.60E-01	Y	2.49E-01	2.49E-01	1.00E+03	**2E-04**	**2E-04**	9.26E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	8.30E-01	Y	7.96E-01	7.96E-01	1.00E+02	**8E-03**	**8E-03**	2.96E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	2.75E-02	N	2.64E-02	2.64E-02	3.00E+00	**9E-03**	**9E-03**	9.79E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	3.20E-01	Y	3.07E-01	3.07E-01	1.00E+02	**3E-03**	**3E-03**	1.14E-01	-		---
TETRACHLOROETHENE	127-18-4	2.00E-01	Y	1.92E-01	1.92E-01	4.00E+01	**5E-03**	**5E-03**	7.12E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	1.05E-02	N	1.01E-02	1.01E-02	2.00E+00	**5E-03**	**5E-03**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0071H**	**Total Inhalation**	**5E-01**	**5E-01**	**1E-05**
		Based on NDs only	**1E-02**	**1E-02**	**4E-07**
		Based on Detects only	**5E-01**	**5E-01**	**1E-05**
		Site-related only	**1E-02**	**1E-02**	**4E-08**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0071H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.15E-01	8.63E-02	5.18E-02	1.29E-01	4.32E-02	1.0E-08		9E-10	5E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.85E-02	7.81E-03	4.68E-03	1.17E-02	3.90E-03	1.0E-06	kidney	8E-09	5E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.85E-02	2.34E-03		7.81E-03		3.1E-06	NHL+liver	7E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	6.50E-03	1.78E-03	1.07E-03	2.67E-03	8.90E-04	4.4E-06		8E-09	5E-09	1E-08	4E-09	**3E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.05E-02	2.88E-03	1.73E-03	4.32E-03	1.44E-03	1.0E-06	kidney	3E-09	2E-09	4E-09	1E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.05E-02	8.63E-04		2.88E-03		3.1E-06	NHL+liver	3E-09		9E-09		**1E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0072H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0072H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0072H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.90E-02	N	2.78E-02	2.78E-02	NA	---	---	1.03E-02	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	6.00E-02	N	5.75E-02	5.75E-02	2.00E+00	**3E-02**	**3E-02**	2.14E-02	3.00E-05		**6E-07**
BENZYL CHLORIDE	100-44-7	1.30E-01	N	1.25E-01	1.25E-01	1.00E+00	**1E-01**	**1E-01**	4.63E-02	4.90E-05		**2E-06**
1,4-DIOXANE	123-91-1	1.00E-01	N	9.59E-02	9.59E-02	3.00E+01	**3E-03**	**3E-03**	3.56E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.40E-02	N	1.34E-02	1.34E-02	2.00E-01	**7E-02**	**7E-02**	4.99E-03	1.60E-05		**8E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	5.75E-01	5.75E-01	2.00E+00	**3E-01**	**3E-01**	2.14E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	2.70E-01	Y	2.59E-01	2.59E-01	6.00E+01	**4E-03**	**4E-03**	9.62E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	5.00E-02	N	4.79E-02	4.79E-02	9.00E+00	**5E-03**	**5E-03**	1.78E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	1.05E-01	1.05E-01	7.00E+00	**2E-02**	**2E-02**	3.92E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	1.15E-01	N	1.10E-01	1.10E-01	4.00E+00	**3E-02**	**3E-02**	4.10E-02	3.70E-06		**2E-07**
1,3,5-Trimethylbenzene	108-67-8	9.50E-02	N	9.11E-02	9.11E-02	6.00E+01	**2E-03**	**2E-03**	3.38E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	5.27E-02	5.27E-02	8.00E+02	**7E-05**	**7E-05**	1.96E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	4.00E-01	Y	3.84E-01	3.84E-01	3.00E+01	**1E-02**	**1E-02**	1.42E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	1.25E-01	1.25E-01	NA	---	---	4.63E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	6.71E-01	6.71E-01	5.00E+00	**1E-01**	**1E-01**	2.49E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	3.64E-01	3.64E-01	1.00E+02	**4E-03**	**4E-03**	1.35E-01	6.00E-06		**8E-07**
CHLOROFORM	67-66-3	2.90E-01	Y	2.78E-01	2.78E-01	9.77E+01	**3E-03**	**3E-03**	1.03E-01	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.10E-01	Y	2.01E-01	2.01E-01	1.00E+03	**2E-04**	**2E-04**	7.48E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.90E-01	N	4.70E-01	4.70E-01	NA	---	---	1.75E-01	2.20E-05		**4E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	3.10E+01	Y	2.97E+01	2.97E+01	2.00E+02	**1E-01**	**1E-01**	1.10E+01	-		**---**
M,P-XYLENE	108-38-3	6.80E-01	Y	6.52E-01	6.52E-01	1.00E+02	**7E-03**	**7E-03**	2.42E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	7.20E-01	Y	6.90E-01	6.90E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.50E-01	Y	2.40E-01	2.40E-01	1.00E+02	**2E-03**	**2E-03**	8.90E-02	-		**---**
TETRACHLOROETHENE	127-18-4	2.40E-01	Y	2.30E-01	2.30E-01	4.00E+01	**6E-03**	**6E-03**	8.55E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	2.80E-02	Y	2.68E-02	2.68E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	4.60E-03	N	4.41E-03	4.41E-03	8.00E+01	**6E-05**	**6E-05**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0072H**	**Total Inhalation**	**9E-01**	**9E-01**	**3E-05**
		ND risk contribution	**7E-01**	**7E-01**	**2E-05**
		Risk for Detects only	**2E-01**	**2E-01**	**6E-06**
		Site-related only	**2E-02**	**2E-02**	**3E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0072H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0072H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0072H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.20E-01	1.97E-01	1.18E-01	2.96E-01	9.86E-02	1.0E-08		2E-09	1E-09	3E-09	1E-09	**7E-09**
TRICHLOROETHENE	79-01-6	2.80E-02	7.67E-03	4.60E-03	1.15E-02	3.84E-03	1.0E-06	kidney	8E-09	5E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.80E-02	2.30E-03		7.67E-03		3.1E-06	NHL+liver	7E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	4.60E-03	1.26E-03	7.56E-04	1.89E-03	6.30E-04	4.4E-06		6E-09	3E-09	8E-09	3E-09	**2E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0076H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	N	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0076H**	**Total Inhalation**	**3E-02**	**3E-02**	**1E-07**
		ND risk contribution	**3E-02**	**3E-02**	**1E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0076H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.25E-02	N	2.16E-02	2.16E-02	NA	---	---	8.01E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	1.00E-01	N	9.59E-02	9.59E-02	2.00E+00	**5E-02**	**5E-02**	3.56E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	2.50E-01	N	2.40E-01	2.40E-01	1.00E+00	**2E-01**	**2E-01**	8.90E-02	4.90E-05		**4E-06**
1,4-DIOXANE	123-91-1	2.50E-01	Y	2.40E-01	2.40E-01	3.00E+01	**8E-03**	**8E-03**	8.90E-02	5.00E-06		**4E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.10E-02	N	2.01E-02	2.01E-02	2.00E-01	**1E-01**	**1E-01**	7.48E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	6.71E-01	6.71E-01	2.00E+00	**3E-01**	**3E-01**	2.49E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.70E+00	Y	1.63E+00	1.63E+00	6.00E+01	**3E-02**	**3E-02**	6.05E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	7.19E-02	7.19E-02	9.00E+00	**8E-03**	**8E-03**	2.67E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.20E-01	Y	1.15E-01	1.15E-01	7.00E+00	**2E-02**	**2E-02**	4.27E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	1.01E-01	1.01E-01	4.00E+00	**3E-02**	**3E-02**	3.74E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	4.10E-01	Y	3.93E-01	3.93E-01	6.00E+01	**7E-03**	**7E-03**	1.46E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.50E-02	N	8.15E-02	8.15E-02	8.00E+02	**1E-04**	**1E-04**	3.03E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	3.40E+00	Y	3.26E+00	3.26E+00	3.00E+01	**1E-01**	**1E-01**	1.21E+00	7.80E-06		**9E-06**
BROMODICHLOROMETHANE	75-27-4	2.55E-01	N	2.45E-01	2.45E-01	NA	---	---	9.08E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	8.50E-01	N	8.15E-01	8.15E-01	5.00E+00	**2E-01**	**2E-01**	3.03E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	4.41E-01	4.41E-01	1.00E+02	**4E-03**	**4E-03**	1.64E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	7.50E-01	Y	7.19E-01	7.19E-01	9.77E+01	**7E-03**	**7E-03**	2.67E-01	2.30E-05		**6E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.80E+00	Y	1.73E+00	1.73E+00	1.00E+03	**2E-03**	**2E-03**	6.41E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	7.67E-01	7.67E-01	NA	---	---	2.85E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	8.50E+00	Y	8.15E+00	8.15E+00	2.00E+02	**4E-02**	**4E-02**	3.03E+00	-		**---**
M,P-XYLENE	108-38-3	8.60E+00	Y	8.25E+00	8.25E+00	1.00E+02	**8E-02**	**8E-02**	3.06E+00	-		**---**
METHYLENE CHLORIDE	75-09-2	8.30E-01	Y	7.96E-01	7.96E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**8E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.20E+00	Y	2.11E+00	2.11E+00	1.00E+02	**2E-02**	**2E-02**	7.84E-01	-		**---**
TETRACHLOROETHENE	127-18-4	3.80E-02	N	3.64E-02	3.64E-02	4.00E+01	**9E-04**	**9E-04**	1.35E-02	2.60E-07		**4E-09**
TRICHLOROETHENE	79-01-6	3.00E-02	N	2.88E-02	2.88E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	7.00E-03	N	6.71E-03	6.71E-03	8.00E+01	**8E-05**	**8E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0076H**	**Total Inhalation**	**1E+00**	**1E+00**	**5E-05**
		ND risk contribution	**9E-01**	**9E-01**	**3E-05**
		Risk for Detects only	**3E-01**	**3E-01**	**2E-05**
		Site-related only	**2E-02**	**2E-02**	**5E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0076H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	6.80E-02	Y	6.52E-02	6.52E-02	7.00E+00	**9E-03**	**9E-03**	2.42E-02	2.60E-05		**6E-07**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	1.35E-02	N	1.29E-02	1.29E-02	8.00E+02	**2E-05**	**2E-05**	4.81E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	3.10E+00	Y	2.97E+00	2.97E+00	3.00E+01	**1E-01**	**1E-01**	1.10E+00	7.80E-06		**9E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.10E-01	Y	2.97E-01	2.97E-01	1.00E+02	**3E-03**	**3E-03**	1.10E-01	6.00E-06		**7E-07**
CHLOROFORM	67-66-3	4.40E-01	Y	4.22E-01	4.22E-01	9.77E+01	**4E-03**	**4E-03**	1.57E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	4.90E+00	Y	4.70E+00	4.70E+00	7.00E+01	**7E-02**	**7E-02**	1.75E+00	-		---
ETHYLBENZENE	100-41-4	1.50E+00	Y	1.44E+00	1.44E+00	1.00E+03	**1E-03**	**1E-03**	5.34E-01	2.50E-06		**1E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	6.60E+00	Y	6.33E+00	6.33E+00	1.00E+02	**6E-02**	**6E-02**	2.35E+00	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	2.90E-02	N	2.78E-02	2.78E-02	3.00E+00	**9E-03**	**9E-03**	1.03E-02	3.40E-05		**4E-07**
O-XYLENE	95-47-6	1.80E+00	Y	1.73E+00	1.73E+00	1.00E+02	**2E-02**	**2E-02**	6.41E-01	-		---
TETRACHLOROETHENE	127-18-4	4.90E-02	Y	4.70E-02	4.70E-02	4.00E+01	**1E-03**	**1E-03**	1.75E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	1.15E-02	N	1.10E-02	1.10E-02	2.00E+00	**6E-03**	**6E-03**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0076H**	**Total Inhalation**	**3E-01**	**3E-01**	**2E-05**
		Based on NDs only	**1E-02**	**1E-02**	**4E-07**
		Based on Detects only	**3E-01**	**3E-01**	**1E-05**
		Site-related only	**7E-03**	**7E-03**	**3E-08**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0076H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.30E-01	2.27E-01	1.36E-01	3.41E-01	1.14E-01	1.0E-08		2E-09	1E-09	3E-09	1E-09	**8E-09**
TRICHLOROETHENE	79-01-6	3.00E-02	8.22E-03	4.93E-03	1.23E-02	4.11E-03	1.0E-06	kidney	8E-09	5E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	3.00E-02	2.47E-03		8.22E-03		3.1E-06	NHL+liver	8E-09		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	7.00E-03	1.92E-03	1.15E-03	2.88E-03	9.59E-04	4.4E-06		8E-09	5E-09	1E-08	4E-09	**3E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.15E-02	3.15E-03	1.89E-03	4.73E-03	1.58E-03	1.0E-06	kidney	3E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.15E-02	9.45E-04		3.15E-03		3.1E-06	NHL+liver	3E-09		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0091H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.76E+01	Y	1.69E+01	1.69E+01	4.00E+01	**4E-01**	**4E-01**	6.27E+00	2.60E-07		**2E-06**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0091H**	**Total Inhalation**	**4E-01**	**4E-01**	**2E-06**
		ND risk contribution	**2E-02**	**2E-02**	**1E-07**
		Risk for Detects only	**4E-01**	**4E-01**	**2E-06**
		Site-related only	**4E-01**	**4E-01**	**2E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0091H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.20E-02	N	2.11E-02	2.11E-02	NA	---	---	7.84E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	1.00E-01	N	9.59E-02	9.59E-02	2.00E+00	**5E-02**	**5E-02**	3.56E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	2.35E-01	2.35E-01	1.00E+00	**2E-01**	**2E-01**	8.73E-02	4.90E-05		**4E-06**
1,4-DIOXANE	123-91-1	2.80E-01	Y	2.68E-01	2.68E-01	3.00E+01	**9E-03**	**9E-03**	9.97E-02	5.00E-06		**5E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.05E-02	N	1.97E-02	1.97E-02	2.00E-01	**1E-01**	**1E-01**	7.30E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.00E+00	N	9.59E-01	9.59E-01	2.00E+00	**5E-01**	**5E-01**	3.56E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.10E-01	Y	4.89E-01	4.89E-01	6.00E+01	**8E-03**	**8E-03**	1.82E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	6.71E-02	6.71E-02	9.00E+00	**7E-03**	**7E-03**	2.49E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	4.70E-01	Y	4.51E-01	4.51E-01	7.00E+00	**6E-02**	**6E-02**	1.67E-01	2.60E-05		**4E-06**
1,2-DICHLOROPROPANE	78-87-5	1.20E-01	Y	1.15E-01	1.15E-01	4.00E+00	**3E-02**	**3E-02**	4.27E-02	3.70E-06		**2E-07**
1,3,5-Trimethylbenzene	108-67-8	1.25E-01	N	1.20E-01	1.20E-01	6.00E+01	**2E-03**	**2E-03**	4.45E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.30E-01	Y	1.25E-01	1.25E-01	8.00E+02	**2E-04**	**2E-04**	4.63E-02	1.10E-05		**5E-07**
BENZENE	71-43-2	8.30E-01	Y	7.96E-01	7.96E-01	3.00E+01	**3E-02**	**3E-02**	2.96E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	7.00E-01	Y	6.71E-01	6.71E-01	NA	---	---	2.49E-01	3.70E-05		**9E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	7.67E-01	7.67E-01	5.00E+00	**2E-01**	**2E-01**	2.85E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	7.70E-01	Y	7.38E-01	7.38E-01	1.00E+02	**7E-03**	**7E-03**	2.74E-01	6.00E-06		**2E-06**
CHLOROFORM	67-66-3	3.80E+00	Y	3.64E+00	3.64E+00	9.77E+01	**4E-02**	**4E-02**	1.35E+00	2.30E-05		**3E-05**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	7.60E-01	Y	7.29E-01	7.29E-01	1.00E+03	**7E-04**	**7E-04**	2.71E-01	2.50E-06		**7E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	7.67E-01	7.67E-01	NA	---	---	2.85E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	5.60E+01	Y	5.37E+01	5.37E+01	2.00E+02	**3E-01**	**3E-01**	1.99E+01	-		**---**
M,P-XYLENE	108-38-3	2.30E+00	Y	2.21E+00	2.21E+00	1.00E+02	**2E-02**	**2E-02**	8.19E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	1.10E+00	Y	1.05E+00	1.05E+00	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**1E-08**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	8.80E-01	Y	8.44E-01	8.44E-01	1.00E+02	**8E-03**	**8E-03**	3.13E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.80E+01	Y	1.73E+01	1.73E+01	4.00E+01	**4E-01**	**4E-01**	6.41E+00	2.60E-07		**2E-06**
TRICHLOROETHENE	79-01-6	4.30E-01	Y	4.12E-01	4.12E-01	2.00E+00	**2E-01**	**2E-01**	M	4.10E-06	M	**9E-07**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-03	N	6.23E-03	6.23E-03	8.00E+01	**8E-05**	**8E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0091H**	**Total Inhalation**	**2E+00**	**2E+00**	**8E-05**
		ND risk contribution	**1E+00**	**1E+00**	**3E-05**
		Risk for Detects only	**1E+00**	**1E+00**	**5E-05**
		Site-related only	**6E-01**	**6E-01**	**3E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0091H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	2.90E-01	Y	2.78E-01	2.78E-01	7.00E+00	**4E-02**	**4E-02**	1.03E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	1.30E-02	N	1.25E-02	1.25E-02	8.00E+02	**2E-05**	**2E-05**	4.63E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	4.30E-01	Y	4.12E-01	4.12E-01	3.00E+01	**1E-02**	**1E-02**	1.53E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.10E-01	Y	2.97E-01	2.97E-01	1.00E+02	**3E-03**	**3E-03**	1.10E-01	6.00E-06		**7E-07**
CHLOROFORM	67-66-3	2.20E+00	Y	2.11E+00	2.11E+00	9.77E+01	**2E-02**	**2E-02**	7.84E-01	2.30E-05		**2E-05**
ETHYL ACETATE	141-78-6	8.20E+00	Y	7.86E+00	7.86E+00	7.00E+01	**1E-01**	**1E-01**	2.92E+00	-		---
ETHYLBENZENE	100-41-4	3.40E-01	Y	3.26E-01	3.26E-01	1.00E+03	**3E-04**	**3E-04**	1.21E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	9.90E-01	Y	9.49E-01	9.49E-01	1.00E+02	**9E-03**	**9E-03**	3.53E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	2.75E-02	N	2.64E-02	2.64E-02	3.00E+00	**9E-03**	**9E-03**	9.79E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	3.80E-01	Y	3.64E-01	3.64E-01	1.00E+02	**4E-03**	**4E-03**	1.35E-01	-		---
TETRACHLOROETHENE	127-18-4	1.70E+01	Y	1.63E+01	1.63E+01	4.00E+01	**4E-01**	**4E-01**	6.05E+00	2.60E-07		**2E-06**
TRICHLOROETHENE	79-01-6	3.60E-01	Y	3.45E-01	3.45E-01	2.00E+00	**2E-01**	**2E-01**	M	4.10E-06	M	**8E-07**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0091H**	**Total Inhalation**	**8E-01**	**8E-01**	**3E-05**
		Based on NDs only	**9E-03**	**9E-03**	**4E-07**
		Based on Detects only	**8E-01**	**8E-01**	**3E-05**
		Site-related only	**6E-01**	**6E-01**	**2E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0091H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.10E+00	3.01E-01	1.81E-01	4.52E-01	1.51E-01	1.0E-08		3E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	4.30E-01	1.18E-01	7.07E-02	1.77E-01	5.89E-02	1.0E-06	kidney	1E-07	7E-08	2E-07	6E-08	**4E-07**
TRICHLOROETHENE	79-01-6	4.30E-01	3.53E-02		1.18E-01		3.1E-06	NHL+liver	1E-07		4E-07		**5E-07**
VINYL CHLORIDE	75-01-4	6.50E-03	1.78E-03	1.07E-03	2.67E-03	8.90E-04	4.4E-06		8E-09	5E-09	1E-08	4E-09	**3E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	3.60E-01	9.86E-02	5.92E-02	1.48E-01	4.93E-02	1.0E-06	kidney	1E-07	6E-08	1E-07	5E-08	**4E-07**
TRICHLOROETHENE	79-01-6	3.60E-01	2.96E-02		9.86E-02		3.1E-06	NHL+liver	9E-08		3E-07		**4E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0098H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	N	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0098H**	**Total Inhalation**	**3E-02**	**3E-02**	**1E-07**
		ND risk contribution	**3E-02**	**3E-02**	**1E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0098H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	2.06E-02	2.06E-02	NA	---	---	7.66E-03	5.80E-05		**4E-07**
1,3-BUTADIENE	106-99-0	1.00E-01	N	9.59E-02	9.59E-02	2.00E+00	**5E-02**	**5E-02**	3.56E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	2.35E-01	2.35E-01	1.00E+00	**2E-01**	**2E-01**	8.73E-02	4.90E-05		**4E-06**
1,4-DIOXANE	123-91-1	1.80E-01	Y	1.73E-01	1.73E-01	3.00E+01	**6E-03**	**6E-03**	6.41E-02	5.00E-06		**3E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	1.92E-02	1.92E-02	2.00E-01	**1E-01**	**1E-01**	7.12E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	6.23E-01	6.23E-01	2.00E+00	**3E-01**	**3E-01**	2.32E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.30E+00	Y	1.25E+00	1.25E+00	6.00E+01	**2E-02**	**2E-02**	4.63E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	6.71E-02	6.71E-02	9.00E+00	**7E-03**	**7E-03**	2.49E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	5.50E-02	N	5.27E-02	5.27E-02	7.00E+00	**8E-03**	**8E-03**	1.96E-02	2.60E-05		**5E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	9.59E-02	9.59E-02	4.00E+00	**2E-02**	**2E-02**	3.56E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	3.30E-01	Y	3.16E-01	3.16E-01	6.00E+01	**5E-03**	**5E-03**	1.18E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.10E+00	Y	1.05E+00	1.05E+00	8.00E+02	**1E-03**	**1E-03**	3.92E-01	1.10E-05		**4E-06**
BENZENE	71-43-2	3.60E+00	Y	3.45E+00	3.45E+00	3.00E+01	**1E-01**	**1E-01**	1.28E+00	7.80E-06		**1E-05**
BROMODICHLOROMETHANE	75-27-4	2.45E-01	N	2.35E-01	2.35E-01	NA	---	---	8.73E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	7.67E-01	7.67E-01	5.00E+00	**2E-01**	**2E-01**	2.85E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	4.32E-01	4.32E-01	1.00E+02	**4E-03**	**4E-03**	1.60E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	4.60E-01	Y	4.41E-01	4.41E-01	9.77E+01	**5E-03**	**5E-03**	1.64E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.50E+00	Y	1.44E+00	1.44E+00	1.00E+03	**1E-03**	**1E-03**	5.34E-01	2.50E-06		**1E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	7.67E-01	7.67E-01	NA	---	---	2.85E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	5.40E+00	Y	5.18E+00	5.18E+00	2.00E+02	**3E-02**	**3E-02**	1.92E+00	-		**---**
M,P-XYLENE	108-38-3	7.10E+00	Y	6.81E+00	6.81E+00	1.00E+02	**7E-02**	**7E-02**	2.53E+00	-		**---**
METHYLENE CHLORIDE	75-09-2	4.55E-01	N	4.36E-01	4.36E-01	6.00E+02	**7E-04**	**7E-04**	M	1.00E-08	M	**4E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.80E+00	Y	1.73E+00	1.73E+00	1.00E+02	**2E-02**	**2E-02**	6.41E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.20E+00	Y	1.15E+00	1.15E+00	4.00E+01	**3E-02**	**3E-02**	4.27E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	7.80E-01	Y	7.48E-01	7.48E-01	2.00E+00	**4E-01**	**4E-01**	M	4.10E-06	M	**2E-06**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-03	N	6.23E-03	6.23E-03	8.00E+01	**8E-05**	**8E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0098H**	**Total Inhalation**	**2E+00**	**2E+00**	**5E-05**
		ND risk contribution	**9E-01**	**9E-01**	**3E-05**
		Risk for Detects only	**7E-01**	**7E-01**	**2E-05**
		Site-related only	**4E-01**	**4E-01**	**2E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0098H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	9.10E-02	Y	8.73E-02	8.73E-02	7.00E+00	**1E-02**	**1E-02**	3.24E-02	2.60E-05		**8E-07**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	1.30E+00	Y	1.25E+00	1.25E+00	8.00E+02	**2E-03**	**2E-03**	4.63E-01	1.10E-05		**5E-06**
BENZENE	71-43-2	5.30E+00	Y	5.08E+00	5.08E+00	3.00E+01	**2E-01**	**2E-01**	1.89E+00	7.80E-06		**1E-05**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	2.80E-01	Y	2.68E-01	2.68E-01	1.00E+02	**3E-03**	**3E-03**	9.97E-02	6.00E-06		**6E-07**
CHLOROFORM	67-66-3	3.30E-01	Y	3.16E-01	3.16E-01	9.77E+01	**3E-03**	**3E-03**	1.18E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	1.50E+00	Y	1.44E+00	1.44E+00	7.00E+01	**2E-02**	**2E-02**	5.34E-01	-		---
ETHYLBENZENE	100-41-4	3.00E+00	Y	2.88E+00	2.88E+00	1.00E+03	**3E-03**	**3E-03**	1.07E+00	2.50E-06		**3E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.30E+01	Y	1.25E+01	1.25E+01	1.00E+02	**1E-01**	**1E-01**	4.63E+00	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	2.50E-02	N	2.40E-02	2.40E-02	3.00E+00	**8E-03**	**8E-03**	8.90E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	3.50E+00	Y	3.36E+00	3.36E+00	1.00E+02	**3E-02**	**3E-02**	1.25E+00	-		---
TETRACHLOROETHENE	127-18-4	3.00E-01	Y	2.88E-01	2.88E-01	4.00E+01	**7E-03**	**7E-03**	1.07E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	3.50E-02	Y	3.36E-02	3.36E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**7E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0098H**	**Total Inhalation**	**4E-01**	**4E-01**	**3E-05**
		Based on NDs only	**8E-03**	**8E-03**	**3E-07**
		Based on Detects only	**4E-01**	**4E-01**	**3E-05**
		Site-related only	**2E-02**	**2E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0098H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.55E-01	1.25E-01	7.48E-02	1.87E-01	6.23E-02	1.0E-08		1E-09	7E-10	2E-09	6E-10	**4E-09**
TRICHLOROETHENE	79-01-6	7.80E-01	2.14E-01	1.28E-01	3.21E-01	1.07E-01	1.0E-06	kidney	2E-07	1E-07	3E-07	1E-07	**8E-07**
TRICHLOROETHENE	79-01-6	7.80E-01	6.41E-02		2.14E-01		3.1E-06	NHL+liver	2E-07		7E-07		**9E-07**
VINYL CHLORIDE	75-01-4	6.50E-03	1.78E-03	1.07E-03	2.67E-03	8.90E-04	4.4E-06		8E-09	5E-09	1E-08	4E-09	**3E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	3.50E-02	9.59E-03	5.75E-03	1.44E-02	4.79E-03	1.0E-06	kidney	1E-08	6E-09	1E-08	5E-09	**3E-08**
TRICHLOROETHENE	79-01-6	3.50E-02	2.88E-03		9.59E-03		3.1E-06	NHL+liver	9E-09		3E-08		**4E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0102H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0102H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0102H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.50E-02	N	1.44E-02	1.44E-02	NA	---	---	5.34E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	2.90E-02	N	2.78E-02	2.78E-02	2.00E+00	**1E-02**	**1E-02**	1.03E-02	3.00E-05		**3E-07**
BENZYL CHLORIDE	100-44-7	7.00E-02	N	6.71E-02	6.71E-02	1.00E+00	**7E-02**	**7E-02**	2.49E-02	4.90E-05		**1E-06**
1,4-DIOXANE	123-91-1	4.20E-01	Y	4.03E-01	4.03E-01	3.00E+01	**1E-02**	**1E-02**	1.50E-01	5.00E-06		**7E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.50E-03	N	8.15E-03	8.15E-03	2.00E-01	**4E-02**	**4E-02**	3.03E-03	1.60E-05		**5E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.05E+00	N	1.01E+00	1.01E+00	2.00E+00	**5E-01**	**5E-01**	3.74E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.10E+00	Y	5.85E+00	5.85E+00	6.00E+01	**1E-01**	**1E-01**	2.17E+00	-		**---**
1,2-DIBROMOETHANE	106-93-4	8.50E-03	N	8.15E-03	8.15E-03	9.00E+00	**9E-04**	**9E-04**	3.03E-03	6.00E-04		**2E-06**
1,2-DICHLOROETHANE	107-06-2	9.00E-01	Y	8.63E-01	8.63E-01	7.00E+00	**1E-01**	**1E-01**	3.21E-01	2.60E-05		**8E-06**
1,2-DICHLOROPROPANE	78-87-5	4.00E-02	N	3.84E-02	3.84E-02	4.00E+00	**1E-02**	**1E-02**	1.42E-02	3.70E-06		**5E-08**
1,3,5-Trimethylbenzene	108-67-8	1.70E+00	Y	1.63E+00	1.63E+00	6.00E+01	**3E-02**	**3E-02**	6.05E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.40E-02	N	4.22E-02	4.22E-02	8.00E+02	**5E-05**	**5E-05**	1.57E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	2.50E+00	Y	2.40E+00	2.40E+00	3.00E+01	**8E-02**	**8E-02**	8.90E-01	7.80E-06		**7E-06**
BROMODICHLOROMETHANE	75-27-4	3.00E-01	Y	2.88E-01	2.88E-01	NA	---	---	1.07E-01	3.70E-05		**4E-06**
BROMOMETHANE	74-83-9	1.95E-01	N	1.87E-01	1.87E-01	5.00E+00	**4E-02**	**4E-02**	6.95E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	1.20E+00	Y	1.15E+00	1.15E+00	1.00E+02	**1E-02**	**1E-02**	4.27E-01	6.00E-06		**3E-06**
CHLOROFORM	67-66-3	1.40E+00	Y	1.34E+00	1.34E+00	9.77E+01	**1E-02**	**1E-02**	4.99E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	3.60E+00	Y	3.45E+00	3.45E+00	1.00E+03	**3E-03**	**3E-03**	1.28E+00	2.50E-06		**3E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	8.15E-01	8.15E-01	NA	---	---	3.03E-01	2.20E-05		**7E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.20E+02	Y	1.15E+02	1.15E+02	2.00E+02	**6E-01**	**6E-01**	4.27E+01	-		**---**
M,P-XYLENE	108-38-3	1.80E+01	Y	1.73E+01	1.73E+01	1.00E+02	**2E-01**	**2E-01**	6.41E+00	-		**---**
METHYLENE CHLORIDE	75-09-2	4.80E-01	N	4.60E-01	4.60E-01	6.00E+02	**8E-04**	**8E-04**	M	1.00E-08	M	**5E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	6.20E+00	Y	5.95E+00	5.95E+00	1.00E+02	**6E-02**	**6E-02**	2.21E+00	-		**---**
TETRACHLOROETHENE	127-18-4	4.70E-01	Y	4.51E-01	4.51E-01	4.00E+01	**1E-02**	**1E-02**	1.67E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	2.00E-02	Y	1.92E-02	1.92E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	2.75E-03	N	2.64E-03	2.64E-03	8.00E+01	**3E-05**	**3E-05**	M	4.40E-06	M	**1E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0102H**	**Total Inhalation**	**2E+00**	**2E+00**	**5E-05**
		ND risk contribution	**7E-01**	**7E-01**	**1E-05**
		Risk for Detects only	**1E+00**	**1E+00**	**4E-05**
		Site-related only	**3E-02**	**3E-02**	**8E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0102H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0102H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0102H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.80E-01	1.32E-01	7.89E-02	1.97E-01	6.58E-02	1.0E-08		1E-09	8E-10	2E-09	7E-10	**5E-09**
TRICHLOROETHENE	79-01-6	2.00E-02	5.48E-03	3.29E-03	8.22E-03	2.74E-03	1.0E-06	kidney	5E-09	3E-09	8E-09	3E-09	**2E-08**
TRICHLOROETHENE	79-01-6	2.00E-02	1.64E-03		5.48E-03		3.1E-06	NHL+liver	5E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	2.75E-03	7.53E-04	4.52E-04	1.13E-03	3.77E-04	4.4E-06		3E-09	2E-09	5E-09	2E-09	**1E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0118H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	N	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0118H**	**Total Inhalation**	**3E-02**	**3E-02**	**1E-07**
		ND risk contribution	**3E-02**	**3E-02**	**1E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0118H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00E-01	N	9.59E-02	9.59E-02	NA	---	---	3.56E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	4.50E-01	N	4.32E-01	4.32E-01	2.00E+00	**2E-01**	**2E-01**	1.60E-01	3.00E-05		**5E-06**
BENZYL CHLORIDE	100-44-7	1.10E+00	N	1.05E+00	1.05E+00	1.00E+00	**1E+00**	**1E+00**	3.92E-01	4.90E-05		**2E-05**
1,4-DIOXANE	123-91-1	1.20E-01	Y	1.15E-01	1.15E-01	3.00E+01	**4E-03**	**4E-03**	4.27E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	9.50E-02	N	9.11E-02	9.11E-02	2.00E-01	**5E-01**	**5E-01**	3.38E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	3.05E+00	N	2.92E+00	2.92E+00	2.00E+00	**1E+00**	**1E+00**	1.09E+00	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.70E-01	Y	4.51E-01	4.51E-01	6.00E+01	**8E-03**	**8E-03**	1.67E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.30E-01	N	3.16E-01	3.16E-01	9.00E+00	**4E-02**	**4E-02**	1.18E-01	6.00E-04		**7E-05**
1,2-DICHLOROETHANE	107-06-2	7.80E-02	Y	7.48E-02	7.48E-02	7.00E+00	**1E-02**	**1E-02**	2.78E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	4.70E-01	N	4.51E-01	4.51E-01	4.00E+00	**1E-01**	**1E-01**	1.67E-01	3.70E-06		**6E-07**
1,3,5-Trimethylbenzene	108-67-8	5.50E-01	N	5.27E-01	5.27E-01	6.00E+01	**9E-03**	**9E-03**	1.96E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	3.70E-01	N	3.55E-01	3.55E-01	8.00E+02	**4E-04**	**4E-04**	1.32E-01	1.10E-05		**1E-06**
BENZENE	71-43-2	7.30E-01	Y	7.00E-01	7.00E-01	3.00E+01	**2E-02**	**2E-02**	2.60E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	1.15E+00	N	1.10E+00	1.10E+00	NA	---	---	4.10E-01	3.70E-05		**2E-05**
BROMOMETHANE	74-83-9	3.75E+00	N	3.60E+00	3.60E+00	5.00E+00	**7E-01**	**7E-01**	1.34E+00	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	4.32E-01	4.32E-01	1.00E+02	**4E-03**	**4E-03**	1.60E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.40E+00	Y	1.34E+00	1.34E+00	9.77E+01	**1E-02**	**1E-02**	4.99E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	3.20E-01	Y	3.07E-01	3.07E-01	1.00E+03	**3E-04**	**3E-04**	1.14E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.70E+00	N	3.55E+00	3.55E+00	NA	---	---	1.32E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.40E+01	Y	1.34E+01	1.34E+01	2.00E+02	**7E-02**	**7E-02**	4.99E+00	-		**---**
M,P-XYLENE	108-38-3	1.30E+00	Y	1.25E+00	1.25E+00	1.00E+02	**1E-02**	**1E-02**	4.63E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	5.00E+02	Y	4.79E+02	4.79E+02	6.00E+02	**8E-01**	**8E-01**	M	1.00E-08	M	**5E-06**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	3.80E-01	Y	3.64E-01	3.64E-01	1.00E+02	**4E-03**	**4E-03**	1.35E-01	-		**---**
TETRACHLOROETHENE	127-18-4	4.90E+00	Y	4.70E+00	4.70E+00	4.00E+01	**1E-01**	**1E-01**	1.75E+00	2.60E-07		**5E-07**
TRICHLOROETHENE	79-01-6	1.30E-01	N	1.25E-01	1.25E-01	2.00E+00	**6E-02**	**6E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	3.00E-02	N	2.88E-02	2.88E-02	8.00E+01	**4E-04**	**4E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0118H**	**Total Inhalation**	**5E+00**	**5E+00**	**2E-04**
		ND risk contribution	**4E+00**	**4E+00**	**1E-04**
		Risk for Detects only	**1E+00**	**1E+00**	**2E-05**
		Site-related only	**2E-01**	**2E-01**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0118H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	4.30E-02	Y	4.12E-02	4.12E-02	7.00E+00	**6E-03**	**6E-03**	1.53E-02	2.60E-05		**4E-07**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	1.30E-02	N	1.25E-02	1.25E-02	8.00E+02	**2E-05**	**2E-05**	4.63E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	5.50E-01	Y	5.27E-01	5.27E-01	3.00E+01	**2E-02**	**2E-02**	1.96E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	3.84E-01	3.84E-01	1.00E+02	**4E-03**	**4E-03**	1.42E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	2.20E+00	Y	2.11E+00	2.11E+00	9.77E+01	**2E-02**	**2E-02**	7.84E-01	2.30E-05		**2E-05**
ETHYL ACETATE	141-78-6	9.00E+00	Y	8.63E+00	8.63E+00	7.00E+01	**1E-01**	**1E-01**	3.21E+00	-		---
ETHYLBENZENE	100-41-4	3.90E-01	Y	3.74E-01	3.74E-01	1.00E+03	**4E-04**	**4E-04**	1.39E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.70E+00	Y	1.63E+00	1.63E+00	1.00E+02	**2E-02**	**2E-02**	6.05E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	2.75E-02	N	2.64E-02	2.64E-02	3.00E+00	**9E-03**	**9E-03**	9.79E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	5.40E-01	Y	5.18E-01	5.18E-01	1.00E+02	**5E-03**	**5E-03**	1.92E-01	-		---
TETRACHLOROETHENE	127-18-4	4.40E+00	Y	4.22E+00	4.22E+00	4.00E+01	**1E-01**	**1E-01**	1.57E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	3.10E-02	Y	2.97E-02	2.97E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0118H**	**Total Inhalation**	**3E-01**	**3E-01**	**2E-05**
		Based on NDs only	**9E-03**	**9E-03**	**4E-07**
		Based on Detects only	**3E-01**	**3E-01**	**2E-05**
		Site-related only	**1E-01**	**1E-01**	**5E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0118H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

TWFc (unitless) RME child 8.22E-02 RME adult 2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.00E+02	1.37E+02	8.22E+01	2.05E+02	6.85E+01	1.0E-08		1E-06	8E-07	2E-06	7E-07	**5E-06**
TRICHLOROETHENE	79-01-6	1.30E-01	3.56E-02	2.14E-02	5.34E-02	1.78E-02	1.0E-06	kidney	4E-08	2E-08	5E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.30E-01	1.07E-02		3.56E-02		3.1E-06	NHL+liver	3E-08		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	3.00E-02	8.22E-03	4.93E-03	1.23E-02	4.11E-03	4.4E-06		4E-08	2E-08	5E-08	2E-08	**1E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	3.10E-02	8.49E-03	5.10E-03	1.27E-02	4.25E-03	1.0E-06	kidney	8E-09	5E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	3.10E-02	2.55E-03		8.49E-03		3.1E-06	NHL+liver	8E-09		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0121H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	N	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0121H**	**Total Inhalation**	**3E-02**	**3E-02**	**1E-07**
		ND risk contribution	**3E-02**	**3E-02**	**1E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0121H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.90E-02	N	2.78E-02	2.78E-02	NA	---	---	1.03E-02	5.80E-05		**6E-07**
1,3-BUTADIENE	106-99-0	9.00E-02	N	8.63E-02	8.63E-02	2.00E+00	**4E-02**	**4E-02**	3.21E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	2.30E-01	N	2.21E-01	2.21E-01	1.00E+00	**2E-01**	**2E-01**	8.19E-02	4.90E-05		**4E-06**
1,4-DIOXANE	123-91-1	2.00E-01	Y	1.92E-01	1.92E-01	3.00E+01	**6E-03**	**6E-03**	7.12E-02	5.00E-06		**4E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.90E-02	N	1.82E-02	1.82E-02	2.00E-01	**9E-02**	**9E-02**	6.77E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	6.71E-01	6.71E-01	2.00E+00	**3E-01**	**3E-01**	2.49E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.35E-01	N	1.29E-01	1.29E-01	6.00E+01	**2E-03**	**2E-03**	4.81E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	6.71E-02	6.71E-02	9.00E+00	**7E-03**	**7E-03**	2.49E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	1.00E-01	Y	9.59E-02	9.59E-02	7.00E+00	**1E-02**	**1E-02**	3.56E-02	2.60E-05		**9E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	1.10E-01	1.10E-01	6.00E+01	**2E-03**	**2E-03**	4.10E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	7.50E-02	N	7.19E-02	7.19E-02	8.00E+02	**9E-05**	**9E-05**	2.67E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	7.30E-01	Y	7.00E-01	7.00E-01	3.00E+01	**2E-02**	**2E-02**	2.60E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	2.40E-01	Y	2.30E-01	2.30E-01	NA	---	---	8.55E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	7.50E-01	N	7.19E-01	7.19E-01	5.00E+00	**1E-01**	**1E-01**	2.67E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	4.32E-01	4.32E-01	1.00E+02	**4E-03**	**4E-03**	1.60E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	9.80E-01	Y	9.40E-01	9.40E-01	9.77E+01	**1E-02**	**1E-02**	3.49E-01	2.30E-05		**8E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.40E-01	Y	2.30E-01	2.30E-01	1.00E+03	**2E-04**	**2E-04**	8.55E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	7.19E-01	7.19E-01	NA	---	---	2.67E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	5.90E+01	Y	5.66E+01	5.66E+01	2.00E+02	**3E-01**	**3E-01**	2.10E+01	-		**---**
M,P-XYLENE	108-38-3	7.80E-01	Y	7.48E-01	7.48E-01	1.00E+02	**7E-03**	**7E-03**	2.78E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	5.50E-01	N	5.27E-01	5.27E-01	6.00E+02	**9E-04**	**9E-04**	M	1.00E-08	M	**5E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.40E-01	Y	2.30E-01	2.30E-01	1.00E+02	**2E-03**	**2E-03**	8.55E-02	-		**---**
TETRACHLOROETHENE	127-18-4	3.90E+00	Y	3.74E+00	3.74E+00	4.00E+01	**9E-02**	**9E-02**	1.39E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	5.90E-02	Y	5.66E-02	5.66E-02	2.00E+00	**3E-02**	**3E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	5.30E-02	Y	5.08E-02	5.08E-02	8.00E+01	**6E-04**	**6E-04**	M	4.40E-06	M	**2E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0121H**	**Total Inhalation**	**1E+00**	**1E+00**	**4E-05**
		ND risk contribution	**9E-01**	**9E-01**	**3E-05**
		Risk for Detects only	**5E-01**	**5E-01**	**2E-05**
		Site-related only	**1E-01**	**1E-01**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0121H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	3.90E-02	Y	3.74E-02	3.74E-02	7.00E+00	**5E-03**	**5E-03**	1.39E-02	2.60E-05		**4E-07**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	6.10E-02	Y	5.85E-02	5.85E-02	8.00E+02	**7E-05**	**7E-05**	2.17E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	3.80E-01	Y	3.64E-01	3.64E-01	3.00E+01	**1E-02**	**1E-02**	1.35E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.10E-01	Y	2.97E-01	2.97E-01	1.00E+02	**3E-03**	**3E-03**	1.10E-01	6.00E-06		**7E-07**
CHLOROFORM	67-66-3	7.00E-01	Y	6.71E-01	6.71E-01	9.77E+01	**7E-03**	**7E-03**	2.49E-01	2.30E-05		**6E-06**
ETHYL ACETATE	141-78-6	2.10E+00	Y	2.01E+00	2.01E+00	7.00E+01	**3E-02**	**3E-02**	7.48E-01	-		---
ETHYLBENZENE	100-41-4	3.20E-01	Y	3.07E-01	3.07E-01	1.00E+03	**3E-04**	**3E-04**	1.14E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.30E+00	Y	1.25E+00	1.25E+00	1.00E+02	**1E-02**	**1E-02**	4.63E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	1.50E-01	Y	1.44E-01	1.44E-01	3.00E+00	**5E-02**	**5E-02**	5.34E-02	3.40E-05		**2E-06**
O-XYLENE	95-47-6	3.90E-01	Y	3.74E-01	3.74E-01	1.00E+02	**4E-03**	**4E-03**	1.39E-01	-		---
TETRACHLOROETHENE	127-18-4	3.30E+00	Y	3.16E+00	3.16E+00	4.00E+01	**8E-02**	**8E-02**	1.18E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	3.70E-02	Y	3.55E-02	3.55E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0121H**	**Total Inhalation**	**2E-01**	**2E-01**	**1E-05**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**2E-01**	**2E-01**	**1E-05**
		Site-related only	**1E-01**	**1E-01**	**4E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0121H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.50E-01	1.51E-01	9.04E-02	2.26E-01	7.53E-02	1.0E-08		2E-09	9E-10	2E-09	8E-10	**5E-09**
TRICHLOROETHENE	79-01-6	5.90E-02	1.62E-02	9.70E-03	2.42E-02	8.08E-03	1.0E-06	kidney	2E-08	1E-08	2E-08	8E-09	**6E-08**
TRICHLOROETHENE	79-01-6	5.90E-02	4.85E-03		1.62E-02		3.1E-06	NHL+liver	2E-08		5E-08		**7E-08**
VINYL CHLORIDE	75-01-4	5.30E-02	1.45E-02	8.71E-03	2.18E-02	7.26E-03	4.4E-06		6E-08	4E-08	1E-07	3E-08	**2E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	3.70E-02	1.01E-02	6.08E-03	1.52E-02	5.07E-03	1.0E-06	kidney	1E-08	6E-09	2E-08	5E-09	**4E-08**
TRICHLOROETHENE	79-01-6	3.70E-02	3.04E-03		1.01E-02		3.1E-06	NHL+liver	9E-09		3E-08		**4E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0122H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	N	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0122H**	**Total Inhalation**	**3E-02**	**3E-02**	**1E-07**
		ND risk contribution	**3E-02**	**3E-02**	**1E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0122H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00E-02	N	1.92E-02	1.92E-02	NA	---	---	7.12E-03	5.80E-05		**4E-07**
1,3-BUTADIENE	106-99-0	2.40E-01	Y	2.30E-01	2.30E-01	2.00E+00	**1E-01**	**1E-01**	8.55E-02	3.00E-05		**3E-06**
BENZYL CHLORIDE	100-44-7	2.25E-01	N	2.16E-01	2.16E-01	1.00E+00	**2E-01**	**2E-01**	8.01E-02	4.90E-05		**4E-06**
1,4-DIOXANE	123-91-1	1.70E-01	Y	1.63E-01	1.63E-01	3.00E+01	**5E-03**	**5E-03**	6.05E-02	5.00E-06		**3E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.90E-02	N	1.82E-02	1.82E-02	2.00E-01	**9E-02**	**9E-02**	6.77E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	5.75E-01	5.75E-01	2.00E+00	**3E-01**	**3E-01**	2.14E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.60E-01	Y	6.33E-01	6.33E-01	6.00E+01	**1E-02**	**1E-02**	2.35E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.50E-02	N	6.23E-02	6.23E-02	9.00E+00	**7E-03**	**7E-03**	2.32E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	8.60E-02	Y	8.25E-02	8.25E-02	7.00E+00	**1E-02**	**1E-02**	3.06E-02	2.60E-05		**8E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	1.10E-01	1.10E-01	6.00E+01	**2E-03**	**2E-03**	4.10E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	7.50E-02	N	7.19E-02	7.19E-02	8.00E+02	**9E-05**	**9E-05**	2.67E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	5.80E-01	Y	5.56E-01	5.56E-01	3.00E+01	**2E-02**	**2E-02**	2.07E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	2.30E-01	N	2.21E-01	2.21E-01	NA	---	---	8.19E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	7.50E-01	N	7.19E-01	7.19E-01	5.00E+00	**1E-01**	**1E-01**	2.67E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	4.60E-01	4.60E-01	1.00E+02	**5E-03**	**5E-03**	1.71E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	4.70E-01	Y	4.51E-01	4.51E-01	9.77E+01	**5E-03**	**5E-03**	1.67E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.30E-01	Y	2.21E-01	2.21E-01	1.00E+03	**2E-04**	**2E-04**	8.19E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	7.19E-01	7.19E-01	NA	---	---	2.67E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	2.10E+01	Y	2.01E+01	2.01E+01	2.00E+02	**1E-01**	**1E-01**	7.48E+00	-		**---**
M,P-XYLENE	108-38-3	8.10E-01	Y	7.77E-01	7.77E-01	1.00E+02	**8E-03**	**8E-03**	2.88E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	7.00E-01	Y	6.71E-01	6.71E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.70E-01	Y	2.59E-01	2.59E-01	1.00E+02	**3E-03**	**3E-03**	9.62E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.80E+00	Y	4.60E+00	4.60E+00	4.00E+01	**1E-01**	**1E-01**	1.71E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	2.70E-02	N	2.59E-02	2.59E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	6.00E-03	N	5.75E-03	5.75E-03	8.00E+01	**7E-05**	**7E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0122H**	**Total Inhalation**	**1E+00**	**1E+00**	**4E-05**
		ND risk contribution	**8E-01**	**8E-01**	**3E-05**
		Risk for Detects only	**4E-01**	**4E-01**	**1E-05**
		Site-related only	**1E-01**	**1E-01**	**8E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0122H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	4.60E-02	Y	4.41E-02	4.41E-02	7.00E+00	**6E-03**	**6E-03**	1.64E-02	2.60E-05		**4E-07**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	7.20E-02	Y	6.90E-02	6.90E-02	8.00E+02	**9E-05**	**9E-05**	2.56E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	4.00E-01	Y	3.84E-01	3.84E-01	3.00E+01	**1E-02**	**1E-02**	1.42E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.00E-01	Y	2.88E-01	2.88E-01	1.00E+02	**3E-03**	**3E-03**	1.07E-01	6.00E-06		**6E-07**
CHLOROFORM	67-66-3	7.40E-01	Y	7.10E-01	7.10E-01	9.77E+01	**7E-03**	**7E-03**	2.64E-01	2.30E-05		**6E-06**
ETHYL ACETATE	141-78-6	6.30E+00	Y	6.04E+00	6.04E+00	7.00E+01	**9E-02**	**9E-02**	2.24E+00	-		---
ETHYLBENZENE	100-41-4	2.30E-01	Y	2.21E-01	2.21E-01	1.00E+03	**2E-04**	**2E-04**	8.19E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	7.90E-01	Y	7.58E-01	7.58E-01	1.00E+02	**8E-03**	**8E-03**	2.81E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	2.80E-02	N	2.68E-02	2.68E-02	3.00E+00	**9E-03**	**9E-03**	9.97E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	3.10E-01	Y	2.97E-01	2.97E-01	1.00E+02	**3E-03**	**3E-03**	1.10E-01	-		---
TETRACHLOROETHENE	127-18-4	3.60E+00	Y	3.45E+00	3.45E+00	4.00E+01	**9E-02**	**9E-02**	1.28E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	2.20E-02	Y	2.11E-02	2.11E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**5E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0122H**	**Total Inhalation**	**2E-01**	**2E-01**	**9E-06**
		Based on NDs only	**9E-03**	**9E-03**	**3E-07**
		Based on Detects only	**2E-01**	**2E-01**	**9E-06**
		Site-related only	**1E-01**	**1E-01**	**4E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0122H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.00E-01	1.92E-01	1.15E-01	2.88E-01	9.59E-02	1.0E-08		2E-09	1E-09	3E-09	1E-09	**7E-09**
TRICHLOROETHENE	79-01-6	2.70E-02	7.40E-03	4.44E-03	1.11E-02	3.70E-03	1.0E-06	kidney	7E-09	4E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.70E-02	2.22E-03		7.40E-03		3.1E-06	NHL+liver	7E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	6.00E-03	1.64E-03	9.86E-04	2.47E-03	8.22E-04	4.4E-06		7E-09	4E-09	1E-08	4E-09	**3E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.20E-02	6.03E-03	3.62E-03	9.04E-03	3.01E-03	1.0E-06	kidney	6E-09	4E-09	9E-09	3E-09	**2E-08**
TRICHLOROETHENE	79-01-6	2.20E-02	1.81E-03		6.03E-03		3.1E-06	NHL+liver	6E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0133H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	N	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0133H**	**Total Inhalation**	**3E-02**	**3E-02**	**1E-07**
		ND risk contribution	**3E-02**	**3E-02**	**1E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0133H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	2.06E-02	2.06E-02	NA	---	---	7.66E-03	5.80E-05		**4E-07**
1,3-BUTADIENE	106-99-0	9.50E-02	N	9.11E-02	9.11E-02	2.00E+00	**5E-02**	**5E-02**	3.38E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	2.40E-01	N	2.30E-01	2.30E-01	1.00E+00	**2E-01**	**2E-01**	8.55E-02	4.90E-05		**4E-06**
1,4-DIOXANE	123-91-1	1.50E-01	Y	1.44E-01	1.44E-01	3.00E+01	**5E-03**	**5E-03**	5.34E-02	5.00E-06		**3E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	1.92E-02	1.92E-02	2.00E-01	**1E-01**	**1E-01**	7.12E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	6.23E-01	6.23E-01	2.00E+00	**3E-01**	**3E-01**	2.32E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.00E-01	Y	4.79E-01	4.79E-01	6.00E+01	**8E-03**	**8E-03**	1.78E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	6.71E-02	6.71E-02	9.00E+00	**7E-03**	**7E-03**	2.49E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	2.50E-01	Y	2.40E-01	2.40E-01	7.00E+00	**3E-02**	**3E-02**	8.90E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	9.59E-02	9.59E-02	4.00E+00	**2E-02**	**2E-02**	3.56E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.25E-01	N	1.20E-01	1.20E-01	6.00E+01	**2E-03**	**2E-03**	4.45E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	7.67E-02	7.67E-02	8.00E+02	**1E-04**	**1E-04**	2.85E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	9.70E-01	Y	9.30E-01	9.30E-01	3.00E+01	**3E-02**	**3E-02**	3.45E-01	7.80E-06		**3E-06**
BROMODICHLOROMETHANE	75-27-4	1.10E+00	Y	1.05E+00	1.05E+00	NA	---	---	3.92E-01	3.70E-05		**1E-05**
BROMOMETHANE	74-83-9	8.00E-01	N	7.67E-01	7.67E-01	5.00E+00	**2E-01**	**2E-01**	2.85E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	4.60E-01	4.60E-01	1.00E+02	**5E-03**	**5E-03**	1.71E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	4.70E+00	Y	4.51E+00	4.51E+00	9.77E+01	**5E-02**	**5E-02**	1.67E+00	2.30E-05		**4E-05**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	3.50E-01	Y	3.36E-01	3.36E-01	1.00E+03	**3E-04**	**3E-04**	1.25E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	7.67E-01	7.67E-01	NA	---	---	2.85E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	2.50E+01	Y	2.40E+01	2.40E+01	2.00E+02	**1E-01**	**1E-01**	8.90E+00	-		**---**
M,P-XYLENE	108-38-3	1.10E+00	Y	1.05E+00	1.05E+00	1.00E+02	**1E-02**	**1E-02**	3.92E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	8.40E-01	Y	8.05E-01	8.05E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**8E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	4.80E-01	Y	4.60E-01	4.60E-01	1.00E+02	**5E-03**	**5E-03**	1.71E-01	-		**---**
TETRACHLOROETHENE	127-18-4	3.90E-01	Y	3.74E-01	3.74E-01	4.00E+01	**9E-03**	**9E-03**	1.39E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	2.85E-02	N	2.73E-02	2.73E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-03	N	6.23E-03	6.23E-03	8.00E+01	**8E-05**	**8E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0133H**	**Total Inhalation**	**1E+00**	**1E+00**	**9E-05**
		ND risk contribution	**9E-01**	**9E-01**	**3E-05**
		Risk for Detects only	**3E-01**	**3E-01**	**6E-05**
		Site-related only	**3E-02**	**3E-02**	**4E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0133H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	1.30E-01	Y	1.25E-01	1.25E-01	7.00E+00	**2E-02**	**2E-02**	4.63E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	2.80E-02	Y	2.68E-02	2.68E-02	8.00E+02	**3E-05**	**3E-05**	9.97E-03	1.10E-05		**1E-07**
BENZENE	71-43-2	4.10E-01	Y	3.93E-01	3.93E-01	3.00E+01	**1E-02**	**1E-02**	1.46E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	2.60E-01	Y	2.49E-01	2.49E-01	1.00E+02	**2E-03**	**2E-03**	9.26E-02	6.00E-06		**6E-07**
CHLOROFORM	67-66-3	1.70E+00	Y	1.63E+00	1.63E+00	9.77E+01	**2E-02**	**2E-02**	6.05E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	7.20E+00	Y	6.90E+00	6.90E+00	7.00E+01	**1E-01**	**1E-01**	2.56E+00	-		---
ETHYLBENZENE	100-41-4	2.70E-01	Y	2.59E-01	2.59E-01	1.00E+03	**3E-04**	**3E-04**	9.62E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	8.30E-01	Y	7.96E-01	7.96E-01	1.00E+02	**8E-03**	**8E-03**	2.96E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	2.65E-02	N	2.54E-02	2.54E-02	3.00E+00	**8E-03**	**8E-03**	9.44E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	3.80E-01	Y	3.64E-01	3.64E-01	1.00E+02	**4E-03**	**4E-03**	1.35E-01	-		---
TETRACHLOROETHENE	127-18-4	2.80E-01	Y	2.68E-01	2.68E-01	4.00E+01	**7E-03**	**7E-03**	9.97E-02	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.40E-02	Y	2.30E-02	2.30E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**5E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0133H**	**Total Inhalation**	**2E-01**	**2E-01**	**2E-05**
		Based on NDs only	**8E-03**	**8E-03**	**3E-07**
		Based on Detects only	**2E-01**	**2E-01**	**2E-05**
		Site-related only	**2E-02**	**2E-02**	**8E-08**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0133H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.40E-01	2.30E-01	1.38E-01	3.45E-01	1.15E-01	1.0E-08		2E-09	1E-09	3E-09	1E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.85E-02	7.81E-03	4.68E-03	1.17E-02	3.90E-03	1.0E-06	kidney	8E-09	5E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.85E-02	2.34E-03		7.81E-03		3.1E-06	NHL+liver	7E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	6.50E-03	1.78E-03	1.07E-03	2.67E-03	8.90E-04	4.4E-06		8E-09	5E-09	1E-08	4E-09	**3E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.40E-02	6.58E-03	3.95E-03	9.86E-03	3.29E-03	1.0E-06	kidney	7E-09	4E-09	1E-08	3E-09	**2E-08**
TRICHLOROETHENE	79-01-6	2.40E-02	1.97E-03		6.58E-03		3.1E-06	NHL+liver	6E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0135H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	N	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0135H**	**Total Inhalation**	**3E-02**	**3E-02**	**1E-07**
		ND risk contribution	**3E-02**	**3E-02**	**1E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0135H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	4.05E-02	N	3.88E-02	3.88E-02	NA	---	---	1.44E-02	5.80E-05		**8E-07**
1,3-BUTADIENE	106-99-0	1.80E-01	N	1.73E-01	1.73E-01	2.00E+00	**9E-02**	**9E-02**	6.41E-02	3.00E-05		**2E-06**
BENZYL CHLORIDE	100-44-7	4.50E-01	N	4.32E-01	4.32E-01	1.00E+00	**4E-01**	**4E-01**	1.60E-01	4.90E-05		**8E-06**
1,4-DIOXANE	123-91-1	3.40E-01	Y	3.26E-01	3.26E-01	3.00E+01	**1E-02**	**1E-02**	1.21E-01	5.00E-06		**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	3.75E-02	N	3.60E-02	3.60E-02	2.00E-01	**2E-01**	**2E-01**	1.34E-02	1.60E-05		**2E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.20E+00	N	1.15E+00	1.15E+00	2.00E+00	**6E-01**	**6E-01**	4.27E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	7.60E-01	Y	7.29E-01	7.29E-01	6.00E+01	**1E-02**	**1E-02**	2.71E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	1.35E-01	N	1.29E-01	1.29E-01	9.00E+00	**1E-02**	**1E-02**	4.81E-02	6.00E-04		**3E-05**
1,2-DICHLOROETHANE	107-06-2	1.70E-01	Y	1.63E-01	1.63E-01	7.00E+00	**2E-02**	**2E-02**	6.05E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	1.90E-01	N	1.82E-01	1.82E-01	4.00E+00	**5E-02**	**5E-02**	6.77E-02	3.70E-06		**3E-07**
1,3,5-Trimethylbenzene	108-67-8	2.30E-01	N	2.21E-01	2.21E-01	6.00E+01	**4E-03**	**4E-03**	8.19E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.50E-01	N	1.44E-01	1.44E-01	8.00E+02	**2E-04**	**2E-04**	5.34E-02	1.10E-05		**6E-07**
BENZENE	71-43-2	7.10E-01	Y	6.81E-01	6.81E-01	3.00E+01	**2E-02**	**2E-02**	2.53E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	4.60E-01	N	4.41E-01	4.41E-01	NA	---	---	1.64E-01	3.70E-05		**6E-06**
BROMOMETHANE	74-83-9	1.50E+00	N	1.44E+00	1.44E+00	5.00E+00	**3E-01**	**3E-01**	5.34E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.00E-01	Y	4.79E-01	4.79E-01	1.00E+02	**5E-03**	**5E-03**	1.78E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.70E+00	Y	1.63E+00	1.63E+00	9.77E+01	**2E-02**	**2E-02**	6.05E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.20E+01	Y	1.15E+01	1.15E+01	1.00E+03	**1E-02**	**1E-02**	4.27E+00	2.50E-06		**1E-05**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.50E+00	N	1.44E+00	1.44E+00	NA	---	---	5.34E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.40E+01	Y	1.34E+01	1.34E+01	2.00E+02	**7E-02**	**7E-02**	4.99E+00	-		**---**
M,P-XYLENE	108-38-3	4.10E+01	Y	3.93E+01	3.93E+01	1.00E+02	**4E-01**	**4E-01**	1.46E+01	-		**---**
METHYLENE CHLORIDE	75-09-2	6.00E-01	N	5.75E-01	5.75E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**6E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.20E+01	Y	1.15E+01	1.15E+01	1.00E+02	**1E-01**	**1E-01**	4.27E+00	-		**---**
TETRACHLOROETHENE	127-18-4	4.50E-01	Y	4.32E-01	4.32E-01	4.00E+01	**1E-02**	**1E-02**	1.60E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	5.50E-02	N	5.27E-02	5.27E-02	2.00E+00	**3E-02**	**3E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	1.20E-02	N	1.15E-02	1.15E-02	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**5E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0135H**	**Total Inhalation**	**2E+00**	**2E+00**	**9E-05**
		ND risk contribution	**2E+00**	**2E+00**	**6E-05**
		Risk for Detects only	**7E-01**	**7E-01**	**3E-05**
		Site-related only	**5E-02**	**5E-02**	**8E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0135H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	1.00E-01	Y	9.59E-02	9.59E-02	7.00E+00	**1E-02**	**1E-02**	3.56E-02	2.60E-05		**9E-07**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	3.00E-02	Y	2.88E-02	2.88E-02	8.00E+02	**4E-05**	**4E-05**	1.07E-02	1.10E-05		**1E-07**
BENZENE	71-43-2	5.00E-01	Y	4.79E-01	4.79E-01	3.00E+01	**2E-02**	**2E-02**	1.78E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.60E-01	Y	3.45E-01	3.45E-01	1.00E+02	**3E-03**	**3E-03**	1.28E-01	6.00E-06		**8E-07**
CHLOROFORM	67-66-3	1.50E+00	Y	1.44E+00	1.44E+00	9.77E+01	**1E-02**	**1E-02**	5.34E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	1.80E+01	Y	1.73E+01	1.73E+01	7.00E+01	**2E-01**	**2E-01**	6.41E+00	-		---
ETHYLBENZENE	100-41-4	1.20E+01	Y	1.15E+01	1.15E+01	1.00E+03	**1E-02**	**1E-02**	4.27E+00	2.50E-06		**1E-05**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	3.20E+01	Y	3.07E+01	3.07E+01	1.00E+02	**3E-01**	**3E-01**	1.14E+01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	1.60E-01	Y	1.53E-01	1.53E-01	3.00E+00	**5E-02**	**5E-02**	5.70E-02	3.40E-05		**2E-06**
O-XYLENE	95-47-6	1.20E+01	Y	1.15E+01	1.15E+01	1.00E+02	**1E-01**	**1E-01**	4.27E+00	-		---
TETRACHLOROETHENE	127-18-4	3.80E-01	Y	3.64E-01	3.64E-01	4.00E+01	**9E-03**	**9E-03**	1.35E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	1.05E-02	N	1.01E-02	1.01E-02	2.00E+00	**5E-03**	**5E-03**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0135H**	**Total Inhalation**	**8E-01**	**8E-01**	**3E-05**
		Based on NDs only	**5E-03**	**5E-03**	**2E-08**
		Based on Detects only	**8E-01**	**8E-01**	**3E-05**
		Site-related only	**1E-02**	**1E-02**	**6E-08**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0135H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.00E-01	1.64E-01	9.86E-02	2.47E-01	8.22E-02	1.0E-08		2E-09	1E-09	2E-09	8E-10	**6E-09**
TRICHLOROETHENE	79-01-6	5.50E-02	1.51E-02	9.04E-03	2.26E-02	7.53E-03	1.0E-06	kidney	2E-08	9E-09	2E-08	8E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.50E-02	4.52E-03		1.51E-02		3.1E-06	NHL+liver	1E-08		5E-08		**6E-08**
VINYL CHLORIDE	75-01-4	1.20E-02	3.29E-03	1.97E-03	4.93E-03	1.64E-03	4.4E-06		1E-08	9E-09	2E-08	7E-09	**5E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.05E-02	2.88E-03	1.73E-03	4.32E-03	1.44E-03	1.0E-06	kidney	3E-09	2E-09	4E-09	1E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.05E-02	8.63E-04		2.88E-03		3.1E-06	NHL+liver	3E-09		9E-09		**1E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0137H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	N	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0137H**	**Total Inhalation**	**3E-02**	**3E-02**	**1E-07**
		ND risk contribution	**3E-02**	**3E-02**	**1E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0137H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.15E-02	N	2.06E-02	2.06E-02	NA	---	---	7.66E-03	5.80E-05		**4E-07**
1,3-BUTADIENE	106-99-0	9.50E-02	N	9.11E-02	9.11E-02	2.00E+00	**5E-02**	**5E-02**	3.38E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	2.40E-01	N	2.30E-01	2.30E-01	1.00E+00	**2E-01**	**2E-01**	8.55E-02	4.90E-05		**4E-06**
1,4-DIOXANE	123-91-1	1.80E-01	Y	1.73E-01	1.73E-01	3.00E+01	**6E-03**	**6E-03**	6.41E-02	5.00E-06		**3E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.00E-02	N	1.92E-02	1.92E-02	2.00E-01	**1E-01**	**1E-01**	7.12E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	6.23E-01	6.23E-01	2.00E+00	**3E-01**	**3E-01**	2.32E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.10E+00	Y	1.05E+00	1.05E+00	6.00E+01	**2E-02**	**2E-02**	3.92E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	6.71E-02	6.71E-02	9.00E+00	**7E-03**	**7E-03**	2.49E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	9.30E-02	Y	8.92E-02	8.92E-02	7.00E+00	**1E-02**	**1E-02**	3.31E-02	2.60E-05		**9E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	9.59E-02	9.59E-02	4.00E+00	**2E-02**	**2E-02**	3.56E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	2.50E-01	Y	2.40E-01	2.40E-01	6.00E+01	**4E-03**	**4E-03**	8.90E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	7.67E-02	7.67E-02	8.00E+02	**1E-04**	**1E-04**	2.85E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	3.30E+00	Y	3.16E+00	3.16E+00	3.00E+01	**1E-01**	**1E-01**	1.18E+00	7.80E-06		**9E-06**
BROMODICHLOROMETHANE	75-27-4	2.45E-01	N	2.35E-01	2.35E-01	NA	---	---	8.73E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	7.67E-01	7.67E-01	5.00E+00	**2E-01**	**2E-01**	2.85E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	4.60E-01	4.60E-01	1.00E+02	**5E-03**	**5E-03**	1.71E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.50E+00	Y	1.44E+00	1.44E+00	9.77E+01	**1E-02**	**1E-02**	5.34E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.80E+00	Y	1.73E+00	1.73E+00	1.00E+03	**2E-03**	**2E-03**	6.41E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	7.67E-01	7.67E-01	NA	---	---	2.85E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	4.80E+00	Y	4.60E+00	4.60E+00	2.00E+02	**2E-02**	**2E-02**	1.71E+00	-		**---**
M,P-XYLENE	108-38-3	8.80E+00	Y	8.44E+00	8.44E+00	1.00E+02	**8E-02**	**8E-02**	3.13E+00	-		**---**
METHYLENE CHLORIDE	75-09-2	9.40E-01	Y	9.01E-01	9.01E-01	6.00E+02	**2E-03**	**2E-03**	M	1.00E-08	M	**9E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.30E+00	Y	2.21E+00	2.21E+00	1.00E+02	**2E-02**	**2E-02**	8.19E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.20E+00	Y	1.15E+00	1.15E+00	4.00E+01	**3E-02**	**3E-02**	4.27E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	1.30E-01	Y	1.25E-01	1.25E-01	2.00E+00	**6E-02**	**6E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	1.30E-02	Y	1.25E-02	1.25E-02	8.01E+01	**2E-04**	**2E-04**	M	4.40E-06	M	**6E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0137H**	**Total Inhalation**	**1E+00**	**1E+00**	**6E-05**
		ND risk contribution	**9E-01**	**9E-01**	**3E-05**
		Risk for Detects only	**4E-01**	**4E-01**	**3E-05**
		Site-related only	**1E-01**	**1E-01**	**8E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0137H**

Pathway:
Inhalation of Indoor Air (Passive)

		RME child	RME adult		RME lifetime
TWFnc (unitless)		9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	5.20E-02	Y	4.99E-02	4.99E-02	7.00E+00	**7E-03**	**7E-03**	1.85E-02	2.60E-05		**5E-07**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	1.30E-02	N	1.25E-02	1.25E-02	8.00E+02	**2E-05**	**2E-05**	4.63E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	1.60E+00	Y	1.53E+00	1.53E+00	3.00E+01	**5E-02**	**5E-02**	5.70E-01	7.80E-06		**4E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	2.80E-01	Y	2.68E-01	2.68E-01	1.00E+02	**3E-03**	**3E-03**	9.97E-02	6.00E-06		**6E-07**
CHLOROFORM	67-66-3	8.40E-01	Y	8.05E-01	8.05E-01	9.77E+01	**8E-03**	**8E-03**	2.99E-01	2.30E-05		**7E-06**
ETHYL ACETATE	141-78-6	5.20E+00	Y	4.99E+00	4.99E+00	7.00E+01	**7E-02**	**7E-02**	1.85E+00	-		---
ETHYLBENZENE	100-41-4	1.10E+00	Y	1.05E+00	1.05E+00	1.00E+03	**1E-03**	**1E-03**	3.92E-01	2.50E-06		**1E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	4.90E+00	Y	4.70E+00	4.70E+00	1.00E+02	**5E-02**	**5E-02**	1.75E+00	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	2.80E-02	N	2.68E-02	2.68E-02	3.00E+00	**9E-03**	**9E-03**	9.97E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	1.40E+00	Y	1.34E+00	1.34E+00	1.00E+02	**1E-02**	**1E-02**	4.99E-01	-		---
TETRACHLOROETHENE	127-18-4	4.60E-01	Y	4.41E-01	4.41E-01	4.00E+01	**1E-02**	**1E-02**	1.64E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	2.40E-02	Y	2.30E-02	2.30E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**5E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0137H**	**Total Inhalation**	**2E-01**	**2E-01**	**1E-05**
		Based on NDs only	**9E-03**	**9E-03**	**4E-07**
		Based on Detects only	**2E-01**	**2E-01**	**1E-05**
		Site-related only	**2E-02**	**2E-02**	**9E-08**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0137H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	9.40E-01	2.58E-01	1.55E-01	3.86E-01	1.29E-01	1.0E-08		3E-09	2E-09	4E-09	1E-09	**9E-09**
TRICHLOROETHENE	79-01-6	1.30E-01	3.56E-02	2.14E-02	5.34E-02	1.78E-02	1.0E-06	kidney	4E-08	2E-08	5E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.30E-01	1.07E-02		3.56E-02		3.1E-06	NHL+liver	3E-08		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	1.30E-02	3.56E-03	2.14E-03	5.34E-03	1.78E-03	4.4E-06		2E-08	9E-09	2E-08	8E-09	**6E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.40E-02	6.58E-03	3.95E-03	9.86E-03	3.29E-03	1.0E-06	kidney	7E-09	4E-09	1E-08	3E-09	**2E-08**
TRICHLOROETHENE	79-01-6	2.40E-02	1.97E-03		6.58E-03		3.1E-06	NHL+liver	6E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0139H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	N	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0139H**	**Total Inhalation**	**3E-02**	**3E-02**	**1E-07**
		ND risk contribution	**3E-02**	**3E-02**	**1E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0139H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.30E-02	N	2.21E-02	2.21E-02	NA	---	---	8.19E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	1.30E+00	Y	1.25E+00	1.25E+00	2.00E+00	**6E-01**	**6E-01**	4.63E-01	3.00E-05		**1E-05**
BENZYL CHLORIDE	100-44-7	2.60E-01	N	2.49E-01	2.49E-01	1.00E+00	**2E-01**	**2E-01**	9.26E-02	4.90E-05		**5E-06**
1,4-DIOXANE	123-91-1	2.20E-01	Y	2.11E-01	2.11E-01	3.00E+01	**7E-03**	**7E-03**	7.84E-02	5.00E-06		**4E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.15E-02	N	2.06E-02	2.06E-02	2.00E-01	**1E-01**	**1E-01**	7.66E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	7.00E-01	N	6.71E-01	6.71E-01	2.00E+00	**3E-01**	**3E-01**	2.49E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.40E-01	Y	4.22E-01	4.22E-01	6.00E+01	**7E-03**	**7E-03**	1.57E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	7.19E-02	7.19E-02	9.00E+00	**8E-03**	**8E-03**	2.67E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	4.90E-01	Y	4.70E-01	4.70E-01	7.00E+00	**7E-02**	**7E-02**	1.75E-01	2.60E-05		**5E-06**
1,2-DICHLOROPROPANE	78-87-5	1.10E-01	N	1.05E-01	1.05E-01	4.00E+00	**3E-02**	**3E-02**	3.92E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	1.25E-01	1.25E-01	6.00E+01	**2E-03**	**2E-03**	4.63E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.60E+01	Y	5.37E+01	5.37E+01	8.00E+02	**7E-02**	**7E-02**	1.99E+01	1.10E-05		**2E-04**
BENZENE	71-43-2	1.90E+00	Y	1.82E+00	1.82E+00	3.00E+01	**6E-02**	**6E-02**	6.77E-01	7.80E-06		**5E-06**
BROMODICHLOROMETHANE	75-27-4	2.60E-01	N	2.49E-01	2.49E-01	NA	---	---	9.26E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	1.90E+00	Y	1.82E+00	1.82E+00	5.00E+00	**4E-01**	**4E-01**	6.77E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	4.22E-01	4.22E-01	1.00E+02	**4E-03**	**4E-03**	1.57E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	1.00E+00	Y	9.59E-01	9.59E-01	9.77E+01	**1E-02**	**1E-02**	3.56E-01	2.30E-05		**8E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	5.30E-01	Y	5.08E-01	5.08E-01	1.00E+03	**5E-04**	**5E-04**	1.89E-01	2.50E-06		**5E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	8.15E-01	8.15E-01	NA	---	---	3.03E-01	2.20E-05		**7E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	3.60E+02	Y	3.45E+02	3.45E+02	2.00E+02	**2E+00**	**2E+00**	1.28E+02	-		**---**
M,P-XYLENE	108-38-3	1.70E+00	Y	1.63E+00	1.63E+00	1.00E+02	**2E-02**	**2E-02**	6.05E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.45E-01	N	3.31E-01	3.31E-01	6.00E+02	**6E-04**	**6E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	4.40E-01	Y	4.22E-01	4.22E-01	1.00E+02	**4E-03**	**4E-03**	1.57E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.50E-01	Y	1.44E-01	1.44E-01	4.00E+01	**4E-03**	**4E-03**	5.34E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	3.05E-02	N	2.92E-02	2.92E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	7.00E-03	N	6.71E-03	6.71E-03	8.00E+01	**8E-05**	**8E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0139H**	**Total Inhalation**	**4E+00**	**4E+00**	**3E-04**
		ND risk contribution	**7E-01**	**7E-01**	**3E-05**
		Risk for Detects only	**3E+00**	**3E+00**	**3E-04**
		Site-related only	**3E-02**	**3E-02**	**5E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0139H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	2.60E-01	Y	2.49E-01	2.49E-01	7.00E+00	**4E-02**	**4E-02**	9.26E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	3.30E+01	Y	3.16E+01	3.16E+01	8.00E+02	**4E-02**	**4E-02**	1.18E+01	1.10E-05		**1E-04**
BENZENE	71-43-2	1.20E+00	Y	1.15E+00	1.15E+00	3.00E+01	**4E-02**	**4E-02**	4.27E-01	7.80E-06		**3E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	2.80E-01	Y	2.68E-01	2.68E-01	1.00E+02	**3E-03**	**3E-03**	9.97E-02	6.00E-06		**6E-07**
CHLOROFORM	67-66-3	7.60E-01	Y	7.29E-01	7.29E-01	9.77E+01	**7E-03**	**7E-03**	2.71E-01	2.30E-05		**6E-06**
ETHYL ACETATE	141-78-6	1.10E+01	Y	1.05E+01	1.05E+01	7.00E+01	**2E-01**	**2E-01**	3.92E+00	-		---
ETHYLBENZENE	100-41-4	4.20E-01	Y	4.03E-01	4.03E-01	1.00E+03	**4E-04**	**4E-04**	1.50E-01	2.50E-06		**4E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.40E+00	Y	1.34E+00	1.34E+00	1.00E+02	**1E-02**	**1E-02**	4.99E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	3.05E-02	N	2.92E-02	2.92E-02	3.00E+00	**1E-02**	**1E-02**	1.09E-02	3.40E-05		**4E-07**
O-XYLENE	95-47-6	4.00E-01	Y	3.84E-01	3.84E-01	1.00E+02	**4E-03**	**4E-03**	1.42E-01	-		---
TETRACHLOROETHENE	127-18-4	1.30E-01	Y	1.25E-01	1.25E-01	4.00E+01	**3E-03**	**3E-03**	4.63E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	1.20E-02	N	1.15E-02	1.15E-02	2.00E+00	**6E-03**	**6E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0139H**	**Total Inhalation**	**3E-01**	**3E-01**	**1E-04**
		Based on NDs only	**2E-02**	**2E-02**	**4E-07**
		Based on Detects only	**3E-01**	**3E-01**	**1E-04**
		Site-related only	**9E-03**	**9E-03**	**4E-08**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0139H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.45E-01	9.45E-02	5.67E-02	1.42E-01	4.73E-02	1.0E-08		9E-10	6E-10	1E-09	5E-10	**3E-09**
TRICHLOROETHENE	79-01-6	3.05E-02	8.36E-03	5.01E-03	1.25E-02	4.18E-03	1.0E-06	kidney	8E-09	5E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	3.05E-02	2.51E-03		8.36E-03		3.1E-06	NHL+liver	8E-09		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	7.00E-03	1.92E-03	1.15E-03	2.88E-03	9.59E-04	4.4E-06		8E-09	5E-09	1E-08	4E-09	**3E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.20E-02	3.29E-03	1.97E-03	4.93E-03	1.64E-03	1.0E-06	kidney	3E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.20E-02	9.86E-04		3.29E-03		3.1E-06	NHL+liver	3E-09		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0145H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0145H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0145H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	1.05E-02	1.05E-02	NA	---	---	3.92E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	1.78E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	8.15E-02	8.15E-02	1.00E+00	**8E-02**	**8E-02**	3.03E-02	4.90E-05		**1E-06**
1,4-DIOXANE	123-91-1	7.50E-02	N	7.19E-02	7.19E-02	3.00E+01	**2E-03**	**2E-03**	2.67E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	6.71E-03	6.71E-03	2.00E-01	**3E-02**	**3E-02**	2.49E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.90E-01	N	4.70E-01	4.70E-01	2.00E+00	**2E-01**	**2E-01**	1.75E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.50E-01	Y	1.44E-01	1.44E-01	6.00E+01	**2E-03**	**2E-03**	5.34E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.35E-02	N	3.21E-02	3.21E-02	9.00E+00	**4E-03**	**4E-03**	1.19E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	8.30E-02	Y	7.96E-02	7.96E-02	7.00E+00	**1E-02**	**1E-02**	2.96E-02	2.60E-05		**8E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	5.75E-02	5.75E-02	6.00E+01	**1E-03**	**1E-03**	2.14E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	2.80E+00	Y	2.68E+00	2.68E+00	8.00E+02	**3E-03**	**3E-03**	9.97E-01	1.10E-05		**1E-05**
BENZENE	71-43-2	4.10E-01	Y	3.93E-01	3.93E-01	3.00E+01	**1E-02**	**1E-02**	1.46E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	1.25E-01	1.25E-01	NA	---	---	4.63E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	6.50E-01	N	6.23E-01	6.23E-01	5.00E+00	**1E-01**	**1E-01**	2.32E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	7.60E-01	Y	7.29E-01	7.29E-01	1.00E+02	**7E-03**	**7E-03**	2.71E-01	6.00E-06		**2E-06**
CHLOROFORM	67-66-3	3.90E-01	Y	3.74E-01	3.74E-01	9.77E+01	**4E-03**	**4E-03**	1.39E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.30E-01	Y	1.25E-01	1.25E-01	1.00E+03	**1E-04**	**1E-04**	4.63E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	6.23E-01	6.23E-01	NA	---	---	2.32E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.50E+01	Y	1.44E+01	1.44E+01	2.00E+02	**7E-02**	**7E-02**	5.34E+00	-		**---**
M,P-XYLENE	108-38-3	4.10E-01	Y	3.93E-01	3.93E-01	1.00E+02	**4E-03**	**4E-03**	1.46E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	4.30E+00	Y	4.12E+00	4.12E+00	6.00E+02	**7E-03**	**7E-03**	M	1.00E-08	M	**4E-08**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.50E-01	Y	1.44E-01	1.44E-01	1.00E+02	**1E-03**	**1E-03**	5.34E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.70E+00	Y	4.51E+00	4.51E+00	4.00E+01	**1E-01**	**1E-01**	1.67E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	4.50E-02	Y	4.32E-02	4.32E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**9E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	8.00E-03	N	7.67E-03	7.67E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0145H**	**Total Inhalation**	**8E-01**	**8E-01**	**3E-05**
		ND risk contribution	**5E-01**	**5E-01**	**2E-05**
		Risk for Detects only	**3E-01**	**3E-01**	**2E-05**
		Site-related only	**1E-01**	**1E-01**	**7E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0145H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0145H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0145H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.30E+00	1.18E+00	7.07E-01	1.77E+00	5.89E-01	1.0E-08		1E-08	7E-09	2E-08	6E-09	**4E-08**
TRICHLOROETHENE	79-01-6	4.50E-02	1.23E-02	7.40E-03	1.85E-02	6.16E-03	1.0E-06	kidney	1E-08	7E-09	2E-08	6E-09	**4E-08**
TRICHLOROETHENE	79-01-6	4.50E-02	3.70E-03		1.23E-02		3.1E-06	NHL+liver	1E-08		4E-08		**5E-08**
VINYL CHLORIDE	75-01-4	8.00E-03	2.19E-03	1.32E-03	3.29E-03	1.10E-03	4.4E-06		1E-08	6E-09	1E-08	5E-09	**3E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0146H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01		TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**				**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	5.00E-02	N	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07	**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M **1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0146H**	**Total Inhalation**	**3E-02**	**3E-02**	**1E-07**
		ND risk contribution	**3E-02**	**3E-02**	**1E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0146H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.25E-02	N	2.16E-02	2.16E-02	NA	---	---	8.01E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	1.00E-01	N	9.59E-02	9.59E-02	2.00E+00	**5E-02**	**5E-02**	3.56E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	2.50E-01	N	2.40E-01	2.40E-01	1.00E+00	**2E-01**	**2E-01**	8.90E-02	4.90E-05		**4E-06**
1,4-DIOXANE	123-91-1	2.30E-01	Y	2.21E-01	2.21E-01	3.00E+01	**7E-03**	**7E-03**	8.19E-02	5.00E-06		**4E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.10E-02	N	2.01E-02	2.01E-02	2.00E-01	**1E-01**	**1E-01**	7.48E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.00E+00	N	9.59E-01	9.59E-01	2.00E+00	**5E-01**	**5E-01**	3.56E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.45E-01	N	1.39E-01	1.39E-01	6.00E+01	**2E-03**	**2E-03**	5.16E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	7.19E-02	7.19E-02	9.00E+00	**8E-03**	**8E-03**	2.67E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	1.34E-01	1.34E-01	7.00E+00	**2E-02**	**2E-02**	4.99E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	1.90E-01	N	1.82E-01	1.82E-01	4.00E+00	**5E-02**	**5E-02**	6.77E-02	3.70E-06		**3E-07**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	1.25E-01	1.25E-01	6.00E+01	**2E-03**	**2E-03**	4.63E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.05E-01	N	1.01E-01	1.01E-01	8.00E+02	**1E-04**	**1E-04**	3.74E-02	1.10E-05		**4E-07**
BENZENE	71-43-2	6.80E-01	Y	6.52E-01	6.52E-01	3.00E+01	**2E-02**	**2E-02**	2.42E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	2.60E-01	N	2.49E-01	2.49E-01	NA	---	---	9.26E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	1.35E+00	N	1.29E+00	1.29E+00	5.00E+00	**3E-01**	**3E-01**	4.81E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	6.40E-01	Y	6.14E-01	6.14E-01	1.00E+02	**6E-03**	**6E-03**	2.28E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.30E+00	Y	1.25E+00	1.25E+00	9.77E+01	**1E-02**	**1E-02**	4.63E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.70E-01	Y	1.63E-01	1.63E-01	1.00E+03	**2E-04**	**2E-04**	6.05E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.35E+00	N	1.29E+00	1.29E+00	NA	---	---	4.81E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	9.00E+01	Y	8.63E+01	8.63E+01	2.00E+02	**4E-01**	**4E-01**	3.21E+01	-		**---**
M,P-XYLENE	108-38-3	4.80E-01	Y	4.60E-01	4.60E-01	1.00E+02	**5E-03**	**5E-03**	1.71E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.35E-01	N	3.21E-01	3.21E-01	6.00E+02	**5E-04**	**5E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.60E-01	Y	1.53E-01	1.53E-01	1.00E+02	**2E-03**	**2E-03**	5.70E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.00E+01	Y	9.59E+00	9.59E+00	4.00E+01	**2E-01**	**2E-01**	3.56E+00	2.60E-07		**9E-07**
TRICHLOROETHENE	79-01-6	3.40E-02	N	3.26E-02	3.26E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**7E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	1.65E-02	N	1.58E-02	1.58E-02	8.00E+01	**2E-04**	**2E-04**	M	4.40E-06	M	**7E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0146H**	**Total Inhalation**	**2E+00**	**2E+00**	**5E-05**
		ND risk contribution	**1E+00**	**1E+00**	**4E-05**
		Risk for Detects only	**7E-01**	**7E-01**	**2E-05**
		Site-related only	**3E-01**	**3E-01**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0146H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	8.00E-02	Y	7.67E-02	7.67E-02	7.00E+00	**1E-02**	**1E-02**	2.85E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	1.35E-02	N	1.29E-02	1.29E-02	8.00E+02	**2E-05**	**2E-05**	4.81E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	6.40E-01	Y	6.14E-01	6.14E-01	3.00E+01	**2E-02**	**2E-02**	2.28E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.30E-01	Y	3.16E-01	3.16E-01	1.00E+02	**3E-03**	**3E-03**	1.18E-01	6.00E-06		**7E-07**
CHLOROFORM	67-66-3	9.20E-01	Y	8.82E-01	8.82E-01	9.77E+01	**9E-03**	**9E-03**	3.28E-01	2.30E-05		**8E-06**
ETHYL ACETATE	141-78-6	3.00E+00	Y	2.88E+00	2.88E+00	7.00E+01	**4E-02**	**4E-02**	1.07E+00	-		---
ETHYLBENZENE	100-41-4	1.70E-01	Y	1.63E-01	1.63E-01	1.00E+03	**2E-04**	**2E-04**	6.05E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	5.30E-01	Y	5.08E-01	5.08E-01	1.00E+02	**5E-03**	**5E-03**	1.89E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	2.90E-02	N	2.78E-02	2.78E-02	3.00E+00	**9E-03**	**9E-03**	1.03E-02	3.40E-05		**4E-07**
O-XYLENE	95-47-6	2.20E-01	Y	2.11E-01	2.11E-01	1.00E+02	**2E-03**	**2E-03**	7.84E-02	-		---
TETRACHLOROETHENE	127-18-4	3.10E+00	Y	2.97E+00	2.97E+00	4.00E+01	**7E-02**	**7E-02**	1.10E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	2.80E-02	Y	2.68E-02	2.68E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0146H**	**Total Inhalation**	**2E-01**	**2E-01**	**1E-05**
		Based on NDs only	**9E-03**	**9E-03**	**4E-07**
		Based on Detects only	**2E-01**	**2E-01**	**1E-05**
		Site-related only	**9E-02**	**9E-02**	**3E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0146H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.35E-01	9.18E-02	5.51E-02	1.38E-01	4.59E-02	1.0E-08		9E-10	6E-10	1E-09	5E-10	**3E-09**
TRICHLOROETHENE	79-01-6	3.40E-02	9.32E-03	5.59E-03	1.40E-02	4.66E-03	1.0E-06	kidney	9E-09	6E-09	1E-08	5E-09	**3E-08**
TRICHLOROETHENE	79-01-6	3.40E-02	2.79E-03		9.32E-03		3.1E-06	NHL+liver	9E-09		3E-08		**4E-08**
VINYL CHLORIDE	75-01-4	1.65E-02	4.52E-03	2.71E-03	6.78E-03	2.26E-03	4.4E-06		2E-08	1E-08	3E-08	1E-08	**7E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.80E-02	7.67E-03	4.60E-03	1.15E-02	3.84E-03	1.0E-06	kidney	8E-09	5E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.80E-02	2.30E-03		7.67E-03		3.1E-06	NHL+liver	7E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0148H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	N	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0148H**	**Total Inhalation**	**3E-02**	**3E-02**	**1E-07**
		ND risk contribution	**3E-02**	**3E-02**	**1E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0148H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.20E-02	N	2.11E-02	2.11E-02	NA	---	---	7.84E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	1.00E-01	N	9.59E-02	9.59E-02	2.00E+00	**5E-02**	**5E-02**	3.56E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	2.35E-01	2.35E-01	1.00E+00	**2E-01**	**2E-01**	8.73E-02	4.90E-05		**4E-06**
1,4-DIOXANE	123-91-1	1.60E-01	Y	1.53E-01	1.53E-01	3.00E+01	**5E-03**	**5E-03**	5.70E-02	5.00E-06		**3E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.05E-02	N	1.97E-02	1.97E-02	2.00E-01	**1E-01**	**1E-01**	7.30E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	6.23E-01	6.23E-01	2.00E+00	**3E-01**	**3E-01**	2.32E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E+00	Y	1.15E+00	1.15E+00	6.00E+01	**2E-02**	**2E-02**	4.27E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.50E-02	N	7.19E-02	7.19E-02	9.00E+00	**8E-03**	**8E-03**	2.67E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	1.05E-01	1.05E-01	7.00E+00	**2E-02**	**2E-02**	3.92E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	1.01E-01	1.01E-01	4.00E+00	**3E-02**	**3E-02**	3.74E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	3.90E-01	Y	3.74E-01	3.74E-01	6.00E+01	**6E-03**	**6E-03**	1.39E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	7.67E-02	7.67E-02	8.00E+02	**1E-04**	**1E-04**	2.85E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	8.80E-01	Y	8.44E-01	8.44E-01	3.00E+01	**3E-02**	**3E-02**	3.13E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	2.50E-01	N	2.40E-01	2.40E-01	NA	---	---	8.90E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	7.67E-01	7.67E-01	5.00E+00	**2E-01**	**2E-01**	2.85E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.60E-01	Y	5.37E-01	5.37E-01	1.00E+02	**5E-03**	**5E-03**	1.99E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.50E+00	Y	1.44E+00	1.44E+00	9.77E+01	**1E-02**	**1E-02**	5.34E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	5.50E-01	Y	5.27E-01	5.27E-01	1.00E+03	**5E-04**	**5E-04**	1.96E-01	2.50E-06		**5E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	7.67E-01	7.67E-01	NA	---	---	2.85E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	6.30E+01	Y	6.04E+01	6.04E+01	2.00E+02	**3E-01**	**3E-01**	2.24E+01	-		**---**
M,P-XYLENE	108-38-3	1.80E+00	Y	1.73E+00	1.73E+00	1.00E+02	**2E-02**	**2E-02**	6.41E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	4.40E+01	Y	4.22E+01	4.22E+01	6.00E+02	**7E-02**	**7E-02**	M	1.00E-08	M	**4E-07**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	6.50E-01	Y	6.23E-01	6.23E-01	1.00E+02	**6E-03**	**6E-03**	2.32E-01	-		**---**
TETRACHLOROETHENE	127-18-4	2.20E+00	Y	2.11E+00	2.11E+00	4.00E+01	**5E-02**	**5E-02**	7.84E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	2.90E-02	N	2.78E-02	2.78E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-03	N	6.23E-03	6.23E-03	8.00E+01	**8E-05**	**8E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0148H**	**Total Inhalation**	**1E+00**	**1E+00**	**5E-05**
		ND risk contribution	**9E-01**	**9E-01**	**3E-05**
		Risk for Detects only	**5E-01**	**5E-01**	**2E-05**
		Site-related only	**7E-02**	**7E-02**	**6E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0148H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	4.90E-02	Y	4.70E-02	4.70E-02	7.00E+00	**7E-03**	**7E-03**	1.75E-02	2.60E-05		**5E-07**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	4.10E-02	Y	3.93E-02	3.93E-02	8.00E+02	**5E-05**	**5E-05**	1.46E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	5.50E-01	Y	5.27E-01	5.27E-01	3.00E+01	**2E-02**	**2E-02**	1.96E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	3.64E-01	3.64E-01	1.00E+02	**4E-03**	**4E-03**	1.35E-01	6.00E-06		**8E-07**
CHLOROFORM	67-66-3	9.90E-01	Y	9.49E-01	9.49E-01	9.77E+01	**1E-02**	**1E-02**	3.53E-01	2.30E-05		**8E-06**
ETHYL ACETATE	141-78-6	8.40E+00	Y	8.05E+00	8.05E+00	7.00E+01	**1E-01**	**1E-01**	2.99E+00	-		---
ETHYLBENZENE	100-41-4	6.70E-01	Y	6.42E-01	6.42E-01	1.00E+03	**6E-04**	**6E-04**	2.39E-01	2.50E-06		**6E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	2.00E+00	Y	1.92E+00	1.92E+00	1.00E+02	**2E-02**	**2E-02**	7.12E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	5.70E-02	Y	5.47E-02	5.47E-02	3.00E+00	**2E-02**	**2E-02**	2.03E-02	3.40E-05		**7E-07**
O-XYLENE	95-47-6	7.80E-01	Y	7.48E-01	7.48E-01	1.00E+02	**7E-03**	**7E-03**	2.78E-01	-		---
TETRACHLOROETHENE	127-18-4	1.60E+00	Y	1.53E+00	1.53E+00	4.00E+01	**4E-02**	**4E-02**	5.70E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	1.00E-02	N	9.59E-03	9.59E-03	2.00E+00	**5E-03**	**5E-03**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0148H**	**Total Inhalation**	**2E-01**	**2E-01**	**1E-05**
		Based on NDs only	**5E-03**	**5E-03**	**2E-08**
		Based on Detects only	**2E-01**	**2E-01**	**1E-05**
		Site-related only	**4E-02**	**4E-02**	**2E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0148H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.40E+01	1.21E+01	7.23E+00	1.81E+01	6.03E+00	1.0E-08		1E-07	7E-08	2E-07	6E-08	**4E-07**
TRICHLOROETHENE	79-01-6	2.90E-02	7.95E-03	4.77E-03	1.19E-02	3.97E-03	1.0E-06	kidney	8E-09	5E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.90E-02	2.38E-03		7.95E-03		3.1E-06	NHL+liver	7E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	6.50E-03	1.78E-03	1.07E-03	2.67E-03	8.90E-04	4.4E-06		8E-09	5E-09	1E-08	4E-09	**3E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-02	2.74E-03	1.64E-03	4.11E-03	1.37E-03	1.0E-06	kidney	3E-09	2E-09	4E-09	1E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.00E-02	8.22E-04		2.74E-03		3.1E-06	NHL+liver	3E-09		8E-09		**1E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0153H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	N	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0153H**	**Total Inhalation**	**3E-02**	**3E-02**	**1E-07**
		ND risk contribution	**3E-02**	**3E-02**	**1E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0153H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.05E-02	N	1.97E-02	1.97E-02	NA	---	---	7.30E-03	5.80E-05		**4E-07**
1,3-BUTADIENE	106-99-0	9.00E-02	N	8.63E-02	8.63E-02	2.00E+00	**4E-02**	**4E-02**	3.21E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	2.30E-01	N	2.21E-01	2.21E-01	1.00E+00	**2E-01**	**2E-01**	8.19E-02	4.90E-05		**4E-06**
1,4-DIOXANE	123-91-1	1.90E-01	Y	1.82E-01	1.82E-01	3.00E+01	**6E-03**	**6E-03**	6.77E-02	5.00E-06		**3E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.90E-02	N	1.82E-02	1.82E-02	2.00E-01	**9E-02**	**9E-02**	6.77E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	5.75E-01	5.75E-01	2.00E+00	**3E-01**	**3E-01**	2.14E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.40E-01	Y	4.22E-01	4.22E-01	6.00E+01	**7E-03**	**7E-03**	1.57E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	6.71E-02	6.71E-02	9.00E+00	**7E-03**	**7E-03**	2.49E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	1.05E-01	1.05E-01	7.00E+00	**2E-02**	**2E-02**	3.92E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	1.10E-01	1.10E-01	6.00E+01	**2E-03**	**2E-03**	4.10E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	7.50E-02	N	7.19E-02	7.19E-02	8.00E+02	**9E-05**	**9E-05**	2.67E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	7.10E-01	Y	6.81E-01	6.81E-01	3.00E+01	**2E-02**	**2E-02**	2.53E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	2.30E-01	N	2.21E-01	2.21E-01	NA	---	---	8.19E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	7.50E-01	N	7.19E-01	7.19E-01	5.00E+00	**1E-01**	**1E-01**	2.67E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	4.22E-01	4.22E-01	1.00E+02	**4E-03**	**4E-03**	1.57E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	1.10E+00	Y	1.05E+00	1.05E+00	9.77E+01	**1E-02**	**1E-02**	3.92E-01	2.30E-05		**9E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.80E-01	Y	2.68E-01	2.68E-01	1.00E+03	**3E-04**	**3E-04**	9.97E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	7.19E-01	7.19E-01	NA	---	---	2.67E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	7.00E+01	Y	6.71E+01	6.71E+01	2.00E+02	**3E-01**	**3E-01**	2.49E+01	-		**---**
M,P-XYLENE	108-38-3	9.30E-01	Y	8.92E-01	8.92E-01	1.00E+02	**9E-03**	**9E-03**	3.31E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	6.10E-01	Y	5.85E-01	5.85E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**6E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	3.20E-01	Y	3.07E-01	3.07E-01	1.00E+02	**3E-03**	**3E-03**	1.14E-01	-		**---**
TETRACHLOROETHENE	127-18-4	8.20E-01	Y	7.86E-01	7.86E-01	4.00E+01	**2E-02**	**2E-02**	2.92E-01	2.60E-07		**8E-08**
TRICHLOROETHENE	79-01-6	2.70E-02	N	2.59E-02	2.59E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	6.00E-03	N	5.75E-03	5.75E-03	8.00E+01	**7E-05**	**7E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0153H**	**Total Inhalation**	**1E+00**	**1E+00**	**4E-05**
		ND risk contribution	**8E-01**	**8E-01**	**3E-05**
		Risk for Detects only	**4E-01**	**4E-01**	**1E-05**
		Site-related only	**4E-02**	**4E-02**	**5E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0153H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	7.30E-02	Y	7.00E-02	7.00E-02	7.00E+00	**1E-02**	**1E-02**	2.60E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	1.30E-02	N	1.25E-02	1.25E-02	8.00E+02	**2E-05**	**2E-05**	4.63E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	3.90E-01	Y	3.74E-01	3.74E-01	3.00E+01	**1E-02**	**1E-02**	1.39E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.00E-01	Y	2.88E-01	2.88E-01	1.00E+02	**3E-03**	**3E-03**	1.07E-01	6.00E-06		**6E-07**
CHLOROFORM	67-66-3	1.10E+00	Y	1.05E+00	1.05E+00	9.77E+01	**1E-02**	**1E-02**	3.92E-01	2.30E-05		**9E-06**
ETHYL ACETATE	141-78-6	8.00E+00	Y	7.67E+00	7.67E+00	7.00E+01	**1E-01**	**1E-01**	2.85E+00	-		---
ETHYLBENZENE	100-41-4	2.10E-01	Y	2.01E-01	2.01E-01	1.00E+03	**2E-04**	**2E-04**	7.48E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	6.80E-01	Y	6.52E-01	6.52E-01	1.00E+02	**7E-03**	**7E-03**	2.42E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	2.80E-02	N	2.68E-02	2.68E-02	3.00E+00	**9E-03**	**9E-03**	9.97E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	2.30E-01	Y	2.21E-01	2.21E-01	1.00E+02	**2E-03**	**2E-03**	8.19E-02	-		---
TETRACHLOROETHENE	127-18-4	4.20E-01	Y	4.03E-01	4.03E-01	4.00E+01	**1E-02**	**1E-02**	1.50E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	1.10E-02	N	1.05E-02	1.05E-02	2.00E+00	**5E-03**	**5E-03**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0153H**	**Total Inhalation**	**2E-01**	**2E-01**	**1E-05**
		Based on NDs only	**1E-02**	**1E-02**	**4E-07**
		Based on Detects only	**2E-01**	**2E-01**	**1E-05**
		Site-related only	**2E-02**	**2E-02**	**6E-08**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0153H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.10E-01	1.67E-01	1.00E-01	2.51E-01	8.36E-02	1.0E-08		2E-09	1E-09	3E-09	8E-10	**6E-09**
TRICHLOROETHENE	79-01-6	2.70E-02	7.40E-03	4.44E-03	1.11E-02	3.70E-03	1.0E-06	kidney	7E-09	4E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.70E-02	2.22E-03		7.40E-03		3.1E-06	NHL+liver	7E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	6.00E-03	1.64E-03	9.86E-04	2.47E-03	8.22E-04	4.4E-06		7E-09	4E-09	1E-08	4E-09	**3E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.10E-02	3.01E-03	1.81E-03	4.52E-03	1.51E-03	1.0E-06	kidney	3E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.10E-02	9.04E-04		3.01E-03		3.1E-06	NHL+liver	3E-09		9E-09		**1E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0162H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	N	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0162H**	**Total Inhalation**	**3E-02**	**3E-02**	**1E-07**
		ND risk contribution	**3E-02**	**3E-02**	**1E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0162H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.50E-02	N	2.40E-02	2.40E-02	NA	---	---	8.90E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	1.15E-01	N	1.10E-01	1.10E-01	2.00E+00	**6E-02**	**6E-02**	4.10E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	2.80E-01	N	2.68E-01	2.68E-01	1.00E+00	**3E-01**	**3E-01**	9.97E-02	4.90E-05		**5E-06**
1,4-DIOXANE	123-91-1	2.00E-01	Y	1.92E-01	1.92E-01	3.00E+01	**6E-03**	**6E-03**	7.12E-02	5.00E-06		**4E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.35E-02	N	2.25E-02	2.25E-02	2.00E-01	**1E-01**	**1E-01**	8.37E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	7.50E-01	N	7.19E-01	7.19E-01	2.00E+00	**4E-01**	**4E-01**	2.67E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E+00	Y	1.15E+00	1.15E+00	6.00E+01	**2E-02**	**2E-02**	4.27E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	8.50E-02	N	8.15E-02	8.15E-02	9.00E+00	**9E-03**	**9E-03**	3.03E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	9.60E-01	Y	9.21E-01	9.21E-01	7.00E+00	**1E-01**	**1E-01**	3.42E-01	2.60E-05		**9E-06**
1,2-DICHLOROPROPANE	78-87-5	1.20E-01	N	1.15E-01	1.15E-01	4.00E+00	**3E-02**	**3E-02**	4.27E-02	3.70E-06		**2E-07**
1,3,5-Trimethylbenzene	108-67-8	2.90E-01	Y	2.78E-01	2.78E-01	6.00E+01	**5E-03**	**5E-03**	1.03E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.50E-02	N	9.11E-02	9.11E-02	8.00E+02	**1E-04**	**1E-04**	3.38E-02	1.10E-05		**4E-07**
BENZENE	71-43-2	2.50E+00	Y	2.40E+00	2.40E+00	3.00E+01	**8E-02**	**8E-02**	8.90E-01	7.80E-06		**7E-06**
BROMODICHLOROMETHANE	75-27-4	2.85E-01	N	2.73E-01	2.73E-01	NA	---	---	1.02E-01	3.70E-05		**4E-06**
BROMOMETHANE	74-83-9	9.50E-01	N	9.11E-01	9.11E-01	5.00E+00	**2E-01**	**2E-01**	3.38E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.80E-01	Y	4.60E-01	4.60E-01	1.00E+02	**5E-03**	**5E-03**	1.71E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	6.80E-01	Y	6.52E-01	6.52E-01	9.77E+01	**7E-03**	**7E-03**	2.42E-01	2.30E-05		**6E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.20E+00	Y	1.15E+00	1.15E+00	1.00E+03	**1E-03**	**1E-03**	4.27E-01	2.50E-06		**1E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	9.00E-01	N	8.63E-01	8.63E-01	NA	---	---	3.21E-01	2.20E-05		**7E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.10E+01	Y	1.05E+01	1.05E+01	2.00E+02	**5E-02**	**5E-02**	3.92E+00	-		**---**
M,P-XYLENE	108-38-3	5.20E+00	Y	4.99E+00	4.99E+00	1.00E+02	**5E-02**	**5E-02**	1.85E+00	-		**---**
METHYLENE CHLORIDE	75-09-2	7.50E-01	Y	7.19E-01	7.19E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.50E+00	Y	1.44E+00	1.44E+00	1.00E+02	**1E-02**	**1E-02**	5.34E-01	-		**---**
TETRACHLOROETHENE	127-18-4	5.20E-01	Y	4.99E-01	4.99E-01	4.00E+01	**1E-02**	**1E-02**	1.85E-01	2.60E-07		**5E-08**
TRICHLOROETHENE	79-01-6	3.35E-02	N	3.21E-02	3.21E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**7E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	7.50E-03	N	7.19E-03	7.19E-03	8.00E+01	**9E-05**	**9E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0162H**	**Total Inhalation**	**1E+00**	**1E+00**	**6E-05**
		ND risk contribution	**1E+00**	**1E+00**	**4E-05**
		Risk for Detects only	**4E-01**	**4E-01**	**2E-05**
		Site-related only	**4E-02**	**4E-02**	**5E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0162H**

Pathway:

Inhalation of Indoor Air (Passive)

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	6.20E-01	Y	5.95E-01	5.95E-01	7.00E+00	**8E-02**	**8E-02**	2.21E-01	2.60E-05		**6E-06**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	1.30E-02	N	1.25E-02	1.25E-02	8.00E+02	**2E-05**	**2E-05**	4.63E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	1.70E+00	Y	1.63E+00	1.63E+00	3.00E+01	**5E-02**	**5E-02**	6.05E-01	7.80E-06		**5E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	2.90E-01	Y	2.78E-01	2.78E-01	1.00E+02	**3E-03**	**3E-03**	1.03E-01	6.00E-06		**6E-07**
CHLOROFORM	67-66-3	2.90E-01	Y	2.78E-01	2.78E-01	9.77E+01	**3E-03**	**3E-03**	1.03E-01	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	6.50E-01	Y	6.23E-01	6.23E-01	7.00E+01	**9E-03**	**9E-03**	2.32E-01	-		---
ETHYLBENZENE	100-41-4	9.80E-01	Y	9.40E-01	9.40E-01	1.00E+03	**9E-04**	**9E-04**	3.49E-01	2.50E-06		**9E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	3.90E+00	Y	3.74E+00	3.74E+00	1.00E+02	**4E-02**	**4E-02**	1.39E+00	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	2.75E-02	N	2.64E-02	2.64E-02	3.00E+00	**9E-03**	**9E-03**	9.79E-03	3.40E-05		**3E-07**
O-XYLENE	95-47-6	1.20E+00	Y	1.15E+00	1.15E+00	1.00E+02	**1E-02**	**1E-02**	4.27E-01	-		---
TETRACHLOROETHENE	127-18-4	2.80E-01	Y	2.68E-01	2.68E-01	4.00E+01	**7E-03**	**7E-03**	9.97E-02	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.90E-02	Y	2.78E-02	2.78E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0162H**	**Total Inhalation**	**2E-01**	**2E-01**	**1E-05**
		Based on NDs only	**9E-03**	**9E-03**	**4E-07**
		Based on Detects only	**2E-01**	**2E-01**	**1E-05**
		Site-related only	**2E-02**	**2E-02**	**9E-08**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0162H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.50E-01	2.05E-01	1.23E-01	3.08E-01	1.03E-01	1.0E-08		2E-09	1E-09	3E-09	1E-09	**7E-09**
TRICHLOROETHENE	79-01-6	3.35E-02	9.18E-03	5.51E-03	1.38E-02	4.59E-03	1.0E-06	kidney	9E-09	6E-09	1E-08	5E-09	**3E-08**
TRICHLOROETHENE	79-01-6	3.35E-02	2.75E-03		9.18E-03		3.1E-06	NHL+liver	9E-09		3E-08		**4E-08**
VINYL CHLORIDE	75-01-4	7.50E-03	2.05E-03	1.23E-03	3.08E-03	1.03E-03	4.4E-06		9E-09	5E-09	1E-08	5E-09	**3E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.90E-02	7.95E-03	4.77E-03	1.19E-02	3.97E-03	1.0E-06	kidney	8E-09	5E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.90E-02	2.38E-03		7.95E-03		3.1E-06	NHL+liver	7E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0166H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.30E-01	Y	1.25E-01	1.25E-01	4.00E+01	**3E-03**	**3E-03**	4.63E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0166H**	**Total Inhalation**	**3E-02**	**3E-02**	**1E-07**
		ND risk contribution	**2E-02**	**2E-02**	**1E-07**
		Risk for Detects only	**3E-03**	**3E-03**	**1E-08**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0166H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00E-02	N	1.92E-02	1.92E-02	NA	---	---	7.12E-03	5.80E-05		**4E-07**
1,3-BUTADIENE	106-99-0	9.00E-02	N	8.63E-02	8.63E-02	2.00E+00	**4E-02**	**4E-02**	3.21E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	2.25E-01	N	2.16E-01	2.16E-01	1.00E+00	**2E-01**	**2E-01**	8.01E-02	4.90E-05		**4E-06**
1,4-DIOXANE	123-91-1	1.50E-01	Y	1.44E-01	1.44E-01	3.00E+01	**5E-03**	**5E-03**	5.34E-02	5.00E-06		**3E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.85E-02	N	1.77E-02	1.77E-02	2.00E-01	**9E-02**	**9E-02**	6.59E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	1.10E+00	N	1.05E+00	1.05E+00	2.00E+00	**5E-01**	**5E-01**	3.92E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	3.20E-01	Y	3.07E-01	3.07E-01	6.00E+01	**5E-03**	**5E-03**	1.14E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.50E-02	N	6.23E-02	6.23E-02	9.00E+00	**7E-03**	**7E-03**	2.32E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	1.05E-01	1.05E-01	7.00E+00	**2E-02**	**2E-02**	3.92E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.15E-01	N	1.10E-01	1.10E-01	6.00E+01	**2E-03**	**2E-03**	4.10E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	7.50E-02	N	7.19E-02	7.19E-02	8.00E+02	**9E-05**	**9E-05**	2.67E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	6.20E-01	Y	5.95E-01	5.95E-01	3.00E+01	**2E-02**	**2E-02**	2.21E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	2.25E-01	N	2.16E-01	2.16E-01	NA	---	---	8.01E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	7.50E-01	N	7.19E-01	7.19E-01	5.00E+00	**1E-01**	**1E-01**	2.67E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	4.51E-01	4.51E-01	1.00E+02	**5E-03**	**5E-03**	1.67E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.60E+00	Y	1.53E+00	1.53E+00	9.77E+01	**2E-02**	**2E-02**	5.70E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	3.30E-01	Y	3.16E-01	3.16E-01	1.00E+03	**3E-04**	**3E-04**	1.18E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.50E-01	N	8.15E-01	8.15E-01	NA	---	---	3.03E-01	2.20E-05		**7E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	3.80E+02	Y	3.64E+02	3.64E+02	2.00E+02	**2E+00**	**2E+00**	1.35E+02	-		**---**
M,P-XYLENE	108-38-3	1.10E+00	Y	1.05E+00	1.05E+00	1.00E+02	**1E-02**	**1E-02**	3.92E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	1.60E+00	Y	1.53E+00	1.53E+00	6.00E+02	**3E-03**	**3E-03**	M	1.00E-08	M	**2E-08**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	3.10E-01	Y	2.97E-01	2.97E-01	1.00E+02	**3E-03**	**3E-03**	1.10E-01	-		**---**
TETRACHLOROETHENE	127-18-4	5.70E+00	Y	5.47E+00	5.47E+00	4.00E+01	**1E-01**	**1E-01**	2.03E+00	2.60E-07		**5E-07**
TRICHLOROETHENE	79-01-6	9.80E-01	Y	9.40E-01	9.40E-01	2.00E+00	**5E-01**	**5E-01**	M	4.10E-06	M	**2E-06**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	6.00E-03	N	5.75E-03	5.75E-03	8.00E+01	**7E-05**	**7E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0166H**	**Total Inhalation**	**4E+00**	**4E+00**	**5E-05**
		ND risk contribution	**1E+00**	**1E+00**	**3E-05**
		Risk for Detects only	**3E+00**	**3E+00**	**2E-05**
		Site-related only	**6E-01**	**6E-01**	**3E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0166H**

Pathway:

Inhalation of Indoor Air (Passive)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	7.60E-02	Y	7.29E-02	7.29E-02	7.00E+00	**1E-02**	**1E-02**	2.71E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	1.40E-02	N	1.34E-02	1.34E-02	8.00E+02	**2E-05**	**2E-05**	4.99E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	4.50E-01	Y	4.32E-01	4.32E-01	3.00E+01	**1E-02**	**1E-02**	1.60E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.10E-01	Y	2.97E-01	2.97E-01	1.00E+02	**3E-03**	**3E-03**	1.10E-01	6.00E-06		**7E-07**
CHLOROFORM	67-66-3	7.00E-01	Y	6.71E-01	6.71E-01	9.77E+01	**7E-03**	**7E-03**	2.49E-01	2.30E-05		**6E-06**
ETHYL ACETATE	141-78-6	1.40E+01	Y	1.34E+01	1.34E+01	7.00E+01	**2E-01**	**2E-01**	4.99E+00	-		---
ETHYLBENZENE	100-41-4	3.00E-01	Y	2.88E-01	2.88E-01	1.00E+03	**3E-04**	**3E-04**	1.07E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.00E+00	Y	9.59E-01	9.59E-01	1.00E+02	**1E-02**	**1E-02**	3.56E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	2.95E-02	N	2.83E-02	2.83E-02	3.00E+00	**9E-03**	**9E-03**	1.05E-02	3.40E-05		**4E-07**
O-XYLENE	95-47-6	3.60E-01	Y	3.45E-01	3.45E-01	1.00E+02	**3E-03**	**3E-03**	1.28E-01	-		---
TETRACHLOROETHENE	127-18-4	3.00E+00	Y	2.88E+00	2.88E+00	4.00E+01	**7E-02**	**7E-02**	1.07E+00	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	7.50E-01	Y	7.19E-01	7.19E-01	2.00E+00	**4E-01**	**4E-01**	M	4.10E-06	M	**2E-06**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0166H**	**Total Inhalation**	**7E-01**	**7E-01**	**1E-05**
		Based on NDs only	**9E-03**	**9E-03**	**4E-07**
		Based on Detects only	**7E-01**	**7E-01**	**1E-05**
		Site-related only	**4E-01**	**4E-01**	**2E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0166H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

TWFc (unitless) RME child 8.22E-02 RME adult 2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	1.60E+00	4.38E-01	2.63E-01	6.58E-01	2.19E-01	1.0E-08		4E-09	3E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	9.80E-01	2.68E-01	1.61E-01	4.03E-01	1.34E-01	1.0E-06	kidney	3E-07	2E-07	4E-07	1E-07	**1E-06**
TRICHLOROETHENE	79-01-6	9.80E-01	8.05E-02		2.68E-01		3.1E-06	NHL+liver	2E-07		8E-07		**1E-06**
VINYL CHLORIDE	75-01-4	6.00E-03	1.64E-03	9.86E-04	2.47E-03	8.22E-04	4.4E-06		7E-09	4E-09	1E-08	4E-09	**3E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	7.50E-01	2.05E-01	1.23E-01	3.08E-01	1.03E-01	1.0E-06	kidney	2E-07	1E-07	3E-07	1E-07	**7E-07**
TRICHLOROETHENE	79-01-6	7.50E-01	6.16E-02		2.05E-01		3.1E-06	NHL+liver	2E-07		6E-07		**8E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0172H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0172H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0172H**

Pathway:
Inhalation of Indoor Air (SUMMA)

		RME child	RME adult		RME lifetime
	TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.50E-02	N	2.40E-02	2.40E-02	NA	---	---	8.90E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	1.78E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	1.05E-01	1.05E-01	1.00E+00	**1E-01**	**1E-01**	3.92E-02	4.90E-05		**2E-06**
1,4-DIOXANE	123-91-1	8.50E-02	N	8.15E-02	8.15E-02	3.00E+01	**3E-03**	**3E-03**	3.03E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	1.15E-02	1.15E-02	2.00E-01	**6E-02**	**6E-02**	4.27E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	4.79E-01	4.79E-01	2.00E+00	**2E-01**	**2E-01**	1.78E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.60E-01	Y	5.37E-01	5.37E-01	6.00E+01	**9E-03**	**9E-03**	1.99E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.45E-02	N	4.27E-02	4.27E-02	9.00E+00	**5E-03**	**5E-03**	1.58E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	7.30E-02	Y	7.00E-02	7.00E-02	7.00E+00	**1E-02**	**1E-02**	2.60E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	9.59E-02	9.59E-02	4.00E+00	**2E-02**	**2E-02**	3.56E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.60E-01	Y	1.53E-01	1.53E-01	6.00E+01	**3E-03**	**3E-03**	5.70E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.70E-02	N	4.51E-02	4.51E-02	8.00E+02	**6E-05**	**6E-05**	1.67E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	3.40E-01	Y	3.26E-01	3.26E-01	3.00E+01	**1E-02**	**1E-02**	1.21E-01	7.80E-06		**9E-07**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	1.05E-01	1.05E-01	NA	---	---	3.92E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	6.00E-01	N	5.75E-01	5.75E-01	5.00E+00	**1E-01**	**1E-01**	2.14E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	4.03E-01	4.03E-01	1.00E+02	**4E-03**	**4E-03**	1.50E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	1.40E-01	Y	1.34E-01	1.34E-01	9.77E+01	**1E-03**	**1E-03**	4.99E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.00E-01	Y	9.59E-02	9.59E-02	1.00E+03	**1E-04**	**1E-04**	3.56E-02	2.50E-06		**9E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.20E-01	N	4.03E-01	4.03E-01	NA	---	---	1.50E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.60E+01	Y	1.53E+01	1.53E+01	2.00E+02	**8E-02**	**8E-02**	5.70E+00	-		**---**
M,P-XYLENE	108-38-3	3.50E-01	Y	3.36E-01	3.36E-01	1.00E+02	**3E-03**	**3E-03**	1.25E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	5.40E-01	Y	5.18E-01	5.18E-01	6.00E+02	**9E-04**	**9E-04**	M	1.00E-08	M	**5E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.20E-01	Y	1.15E-01	1.15E-01	1.00E+02	**1E-03**	**1E-03**	4.27E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.50E+00	Y	4.32E+00	4.32E+00	4.00E+01	**1E-01**	**1E-01**	1.60E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	3.00E-02	Y	2.88E-02	2.88E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	3.95E-03	N	3.79E-03	3.79E-03	8.00E+01	**5E-05**	**5E-05**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0172H**	**Total Inhalation**	**8E-01**	**8E-01**	**2E-05**
		ND risk contribution	**6E-01**	**6E-01**	**2E-05**
		Risk for Detects only	**2E-01**	**2E-01**	**4E-06**
		Site-related only	**1E-01**	**1E-01**	**6E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0172H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0172H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0172H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.40E-01	1.48E-01	8.88E-02	2.22E-01	7.40E-02	1.0E-08		1E-09	9E-10	2E-09	7E-10	**5E-09**
TRICHLOROETHENE	79-01-6	3.00E-02	8.22E-03	4.93E-03	1.23E-02	4.11E-03	1.0E-06	kidney	8E-09	5E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	3.00E-02	2.47E-03		8.22E-03		3.1E-06	NHL+liver	8E-09		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	3.95E-03	1.08E-03	6.49E-04	1.62E-03	5.41E-04	4.4E-06		5E-09	3E-09	7E-09	2E-09	**2E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0173H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	N	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0173H**	**Total Inhalation**	**3E-02**	**3E-02**	**1E-07**
		ND risk contribution	**3E-02**	**3E-02**	**1E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0173H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.20E-02	N	2.11E-02	2.11E-02	NA	---	---	7.84E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	1.00E-01	N	9.59E-02	9.59E-02	2.00E+00	**5E-02**	**5E-02**	3.56E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	2.45E-01	N	2.35E-01	2.35E-01	1.00E+00	**2E-01**	**2E-01**	8.73E-02	4.90E-05		**4E-06**
1,4-DIOXANE	123-91-1	1.40E-01	Y	1.34E-01	1.34E-01	3.00E+01	**4E-03**	**4E-03**	4.99E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	2.05E-02	N	1.97E-02	1.97E-02	2.00E-01	**1E-01**	**1E-01**	7.30E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	6.23E-01	6.23E-01	2.00E+00	**3E-01**	**3E-01**	2.32E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.70E-01	Y	4.51E-01	4.51E-01	6.00E+01	**8E-03**	**8E-03**	1.67E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	6.71E-02	6.71E-02	9.00E+00	**7E-03**	**7E-03**	2.49E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	2.00E-01	Y	1.92E-01	1.92E-01	7.00E+00	**3E-02**	**3E-02**	7.12E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	1.01E-01	1.01E-01	4.00E+00	**3E-02**	**3E-02**	3.74E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	1.25E-01	N	1.20E-01	1.20E-01	6.00E+01	**2E-03**	**2E-03**	4.45E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.00E-02	N	7.67E-02	7.67E-02	8.00E+02	**1E-04**	**1E-04**	2.85E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	5.70E-01	Y	5.47E-01	5.47E-01	3.00E+01	**2E-02**	**2E-02**	2.03E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	2.50E-01	N	2.40E-01	2.40E-01	NA	---	---	8.90E-02	3.70E-05		**3E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	7.67E-01	7.67E-01	5.00E+00	**2E-01**	**2E-01**	2.85E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	4.32E-01	4.32E-01	1.00E+02	**4E-03**	**4E-03**	1.60E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.40E+00	Y	1.34E+00	1.34E+00	9.77E+01	**1E-02**	**1E-02**	4.99E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.00E-01	Y	9.59E-02	9.59E-02	1.00E+03	**1E-04**	**1E-04**	3.56E-02	2.50E-06		**9E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	7.67E-01	7.67E-01	NA	---	---	2.85E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	2.70E+01	Y	2.59E+01	2.59E+01	2.00E+02	**1E-01**	**1E-01**	9.62E+00	-		**---**
M,P-XYLENE	108-38-3	3.70E-01	Y	3.55E-01	3.55E-01	1.00E+02	**4E-03**	**4E-03**	1.32E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.25E-01	N	3.12E-01	3.12E-01	6.00E+02	**5E-04**	**5E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.40E-01	Y	1.34E-01	1.34E-01	1.00E+02	**1E-03**	**1E-03**	4.99E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.60E+00	Y	4.41E+00	4.41E+00	4.00E+01	**1E-01**	**1E-01**	1.64E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	1.20E-01	Y	1.15E-01	1.15E-01	2.00E+00	**6E-02**	**6E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-03	N	6.23E-03	6.23E-03	8.00E+01	**8E-05**	**8E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0173H**	**Total Inhalation**	**1E+00**	**1E+00**	**5E-05**
		ND risk contribution	**9E-01**	**9E-01**	**3E-05**
		Risk for Detects only	**4E-01**	**4E-01**	**2E-05**
		Site-related only	**2E-01**	**2E-01**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0173H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	1.00E-01	Y	9.59E-02	9.59E-02	7.00E+00	**1E-02**	**1E-02**	3.56E-02	2.60E-05		**9E-07**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	1.35E-02	N	1.29E-02	1.29E-02	8.00E+02	**2E-05**	**2E-05**	4.81E-03	1.10E-05		**5E-08**
BENZENE	71-43-2	4.40E-01	Y	4.22E-01	4.22E-01	3.00E+01	**1E-02**	**1E-02**	1.57E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.30E-01	Y	3.16E-01	3.16E-01	1.00E+02	**3E-03**	**3E-03**	1.18E-01	6.00E-06		**7E-07**
CHLOROFORM	67-66-3	2.00E+00	Y	1.92E+00	1.92E+00	9.77E+01	**2E-02**	**2E-02**	7.12E-01	2.30E-05		**2E-05**
ETHYL ACETATE	141-78-6	7.00E+00	Y	6.71E+00	6.71E+00	7.00E+01	**1E-01**	**1E-01**	2.49E+00	-		---
ETHYLBENZENE	100-41-4	1.10E-01	Y	1.05E-01	1.05E-01	1.00E+03	**1E-04**	**1E-04**	3.92E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	4.50E-01	Y	4.32E-01	4.32E-01	1.00E+02	**4E-03**	**4E-03**	1.60E-01	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	2.90E-02	N	2.78E-02	2.78E-02	3.00E+00	**9E-03**	**9E-03**	1.03E-02	3.40E-05		**4E-07**
O-XYLENE	95-47-6	2.10E-01	Y	2.01E-01	2.01E-01	1.00E+02	**2E-03**	**2E-03**	7.48E-02	-		---
TETRACHLOROETHENE	127-18-4	5.10E+00	Y	4.89E+00	4.89E+00	4.00E+01	**1E-01**	**1E-01**	1.82E+00	2.60E-07		**5E-07**
TRICHLOROETHENE	79-01-6	1.10E-02	N	1.05E-02	1.05E-02	2.00E+00	**5E-03**	**5E-03**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0173H**	**Total Inhalation**	**3E-01**	**3E-01**	**2E-05**
		Based on NDs only	**1E-02**	**1E-02**	**4E-07**
		Based on Detects only	**3E-01**	**3E-01**	**2E-05**
		Site-related only	**1E-01**	**1E-01**	**5E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0173H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.25E-01	8.90E-02	5.34E-02	1.34E-01	4.45E-02	1.0E-08		9E-10	5E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.20E-01	3.29E-02	1.97E-02	4.93E-02	1.64E-02	1.0E-06	kidney	3E-08	2E-08	5E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.20E-01	9.86E-03		3.29E-02		3.1E-06	NHL+liver	3E-08		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	6.50E-03	1.78E-03	1.07E-03	2.67E-03	8.90E-04	4.4E-06		8E-09	5E-09	1E-08	4E-09	**3E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.10E-02	3.01E-03	1.81E-03	4.52E-03	1.51E-03	1.0E-06	kidney	3E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.10E-02	9.04E-04		3.01E-03		3.1E-06	NHL+liver	3E-09		9E-09		**1E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0174H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.00E-02	N	4.79E-02	4.79E-02	4.00E+01	**1E-03**	**1E-03**	1.78E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0174H**	**Total Inhalation**	**3E-02**	**3E-02**	**1E-07**
		ND risk contribution	**3E-02**	**3E-02**	**1E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0174H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.00E-02	N	1.92E-02	1.92E-02	NA	---	---	7.12E-03	5.80E-05		**4E-07**
1,3-BUTADIENE	106-99-0	9.00E-02	N	8.63E-02	8.63E-02	2.00E+00	**4E-02**	**4E-02**	3.21E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	2.25E-01	N	2.16E-01	2.16E-01	1.00E+00	**2E-01**	**2E-01**	8.01E-02	4.90E-05		**4E-06**
1,4-DIOXANE	123-91-1	5.50E-01	Y	5.27E-01	5.27E-01	3.00E+01	**2E-02**	**2E-02**	1.96E-01	5.00E-06		**1E-06**
1,1,2-TRICHLOROETHANE	79-00-5	1.85E-02	N	1.77E-02	1.77E-02	2.00E-01	**9E-02**	**9E-02**	6.59E-03	1.60E-05		**1E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	5.75E-01	5.75E-01	2.00E+00	**3E-01**	**3E-01**	2.14E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.40E-01	Y	6.14E-01	6.14E-01	6.00E+01	**1E-02**	**1E-02**	2.28E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	6.50E-02	N	6.23E-02	6.23E-02	9.00E+00	**7E-03**	**7E-03**	2.32E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	2.20E+00	Y	2.11E+00	2.11E+00	7.00E+00	**3E-01**	**3E-01**	7.84E-01	2.60E-05		**2E-05**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	2.20E-01	Y	2.11E-01	2.11E-01	6.00E+01	**4E-03**	**4E-03**	7.84E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.70E-01	Y	1.63E-01	1.63E-01	8.00E+02	**2E-04**	**2E-04**	6.05E-02	1.10E-05		**7E-07**
BENZENE	71-43-2	7.60E-01	Y	7.29E-01	7.29E-01	3.00E+01	**2E-02**	**2E-02**	2.71E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	1.00E+00	Y	9.59E-01	9.59E-01	NA	---	---	3.56E-01	3.70E-05		**1E-05**
BROMOMETHANE	74-83-9	7.50E-01	N	7.19E-01	7.19E-01	5.00E+00	**1E-01**	**1E-01**	2.67E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	7.10E-01	Y	6.81E-01	6.81E-01	1.00E+02	**7E-03**	**7E-03**	2.53E-01	6.00E-06		**2E-06**
CHLOROFORM	67-66-3	4.20E+00	Y	4.03E+00	4.03E+00	9.77E+01	**4E-02**	**4E-02**	1.50E+00	2.30E-05		**3E-05**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.30E+00	Y	2.21E+00	2.21E+00	1.00E+03	**2E-03**	**2E-03**	8.19E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	7.19E-01	7.19E-01	NA	---	---	2.67E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.80E+01	Y	1.73E+01	1.73E+01	2.00E+02	**9E-02**	**9E-02**	6.41E+00	-		**---**
M,P-XYLENE	108-38-3	8.20E+00	Y	7.86E+00	7.86E+00	1.00E+02	**8E-02**	**8E-02**	2.92E+00	-		**---**
METHYLENE CHLORIDE	75-09-2	2.20E+00	Y	2.11E+00	2.11E+00	6.00E+02	**4E-03**	**4E-03**	M	1.00E-08	M	**2E-08**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.30E+00	Y	2.21E+00	2.21E+00	1.00E+02	**2E-02**	**2E-02**	8.19E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.70E+00	Y	1.63E+00	1.63E+00	4.00E+01	**4E-02**	**4E-02**	6.05E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	2.65E-02	N	2.54E-02	2.54E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	1.00E-01	Y	9.59E-02	9.59E-02	8.00E+01	**1E-03**	**1E-03**	M	4.40E-06	M	**4E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0174H**	**Total Inhalation**	**1E+00**	**1E+00**	**1E-04**
		ND risk contribution	**8E-01**	**8E-01**	**3E-05**
		Risk for Detects only	**6E-01**	**6E-01**	**8E-05**
		Site-related only	**7E-02**	**7E-02**	**2E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0174H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	9.20E-01	Y	8.82E-01	8.82E-01	7.00E+00	**1E-01**	**1E-01**	3.28E-01	2.60E-05		**9E-06**
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	4.30E-02	Y	4.12E-02	4.12E-02	8.00E+02	**5E-05**	**5E-05**	1.53E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	9.30E-01	Y	8.92E-01	8.92E-01	3.00E+01	**3E-02**	**3E-02**	3.31E-01	7.80E-06		**3E-06**
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.60E-01	Y	3.45E-01	3.45E-01	1.00E+02	**3E-03**	**3E-03**	1.28E-01	6.00E-06		**8E-07**
CHLOROFORM	67-66-3	1.80E+00	Y	1.73E+00	1.73E+00	9.77E+01	**2E-02**	**2E-02**	6.41E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	1.00E+01	Y	9.59E+00	9.59E+00	7.00E+01	**1E-01**	**1E-01**	3.56E+00	-		---
ETHYLBENZENE	100-41-4	1.20E+00	Y	1.15E+00	1.15E+00	1.00E+03	**1E-03**	**1E-03**	4.27E-01	2.50E-06		**1E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	3.60E+00	Y	3.45E+00	3.45E+00	1.00E+02	**3E-02**	**3E-02**	1.28E+00	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	2.90E-02	N	2.78E-02	2.78E-02	3.00E+00	**9E-03**	**9E-03**	1.03E-02	3.40E-05		**4E-07**
O-XYLENE	95-47-6	1.10E+00	Y	1.05E+00	1.05E+00	1.00E+02	**1E-02**	**1E-02**	3.92E-01	-		---
TETRACHLOROETHENE	127-18-4	1.20E+00	Y	1.15E+00	1.15E+00	4.00E+01	**3E-02**	**3E-02**	4.27E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	1.10E-02	N	1.05E-02	1.05E-02	2.00E+00	**5E-03**	**5E-03**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0174H**	**Total Inhalation**	**4E-01**	**4E-01**	**3E-05**
		Based on NDs only	**1E-02**	**1E-02**	**4E-07**
		Based on Detects only	**4E-01**	**4E-01**	**3E-05**
		Site-related only	**3E-02**	**3E-02**	**1E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0174H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-02	1.37E-02	8.22E-03	2.05E-02	6.85E-03	1.0E-06	kidney	1E-08	8E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.00E-02	4.11E-03		1.37E-02		3.1E-06	NHL+liver	1E-08		4E-08		**6E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.20E+00	6.03E-01	3.62E-01	9.04E-01	3.01E-01	1.0E-08		6E-09	4E-09	9E-09	3E-09	**2E-08**
TRICHLOROETHENE	79-01-6	2.65E-02	7.26E-03	4.36E-03	1.09E-02	3.63E-03	1.0E-06	kidney	7E-09	4E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.65E-02	2.18E-03		7.26E-03		3.1E-06	NHL+liver	7E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	1.00E-01	2.74E-02	1.64E-02	4.11E-02	1.37E-02	4.4E-06		1E-07	7E-08	2E-07	6E-08	**4E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.10E-02	3.01E-03	1.81E-03	4.52E-03	1.51E-03	1.0E-06	kidney	3E-09	2E-09	5E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.10E-02	9.04E-04		3.01E-03		3.1E-06	NHL+liver	3E-09		9E-09		**1E-08**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0180H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0180H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0180H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.65E-02	N	2.54E-02	2.54E-02	NA	---	---	9.44E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	5.50E-02	N	5.27E-02	5.27E-02	2.00E+00	**3E-02**	**3E-02**	1.96E-02	3.00E-05		**6E-07**
BENZYL CHLORIDE	100-44-7	1.15E-01	N	1.10E-01	1.10E-01	1.00E+00	**1E-01**	**1E-01**	4.10E-02	4.90E-05		**2E-06**
1,4-DIOXANE	123-91-1	9.00E-02	N	8.63E-02	8.63E-02	3.00E+01	**3E-03**	**3E-03**	3.21E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.30E-02	N	1.25E-02	1.25E-02	2.00E-01	**6E-02**	**6E-02**	4.63E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.50E-01	N	5.27E-01	5.27E-01	2.00E+00	**3E-01**	**3E-01**	1.96E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	6.00E-02	N	5.75E-02	5.75E-02	6.00E+01	**1E-03**	**1E-03**	2.14E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.70E-02	N	4.51E-02	4.51E-02	9.00E+00	**5E-03**	**5E-03**	1.67E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	7.30E-02	Y	7.00E-02	7.00E-02	7.00E+00	**1E-02**	**1E-02**	2.60E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	1.01E-01	1.01E-01	4.00E+00	**3E-02**	**3E-02**	3.74E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	9.00E-02	N	8.63E-02	8.63E-02	6.00E+01	**1E-03**	**1E-03**	3.21E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.95E-02	N	4.75E-02	4.75E-02	8.00E+02	**6E-05**	**6E-05**	1.76E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	3.70E-01	Y	3.55E-01	3.55E-01	3.00E+01	**1E-02**	**1E-02**	1.32E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.20E-01	N	1.15E-01	1.15E-01	NA	---	---	4.27E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	6.50E-01	N	6.23E-01	6.23E-01	5.00E+00	**1E-01**	**1E-01**	2.32E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	4.03E-01	4.03E-01	1.00E+02	**4E-03**	**4E-03**	1.50E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	1.30E-01	Y	1.25E-01	1.25E-01	9.77E+01	**1E-03**	**1E-03**	4.63E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	5.60E-02	Y	5.37E-02	5.37E-02	1.00E+03	**5E-05**	**5E-05**	1.99E-02	2.50E-06		**5E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.45E-01	N	4.27E-01	4.27E-01	NA	---	---	1.58E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.30E+01	Y	1.25E+01	1.25E+01	2.00E+02	**6E-02**	**6E-02**	4.63E+00	-		**---**
M,P-XYLENE	108-38-3	1.90E-01	Y	1.82E-01	1.82E-01	1.00E+02	**2E-03**	**2E-03**	6.77E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	6.80E-01	Y	6.52E-01	6.52E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	6.10E-02	Y	5.85E-02	5.85E-02	1.00E+02	**6E-04**	**6E-04**	2.17E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.40E-02	Y	4.22E-02	4.22E-02	4.00E+01	**1E-03**	**1E-03**	1.57E-02	2.60E-07		**4E-09**
TRICHLOROETHENE	79-01-6	9.00E-03	N	8.63E-03	8.63E-03	2.00E+00	**4E-03**	**4E-03**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	4.20E-03	N	4.03E-03	4.03E-03	8.00E+01	**5E-05**	**5E-05**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0180H**	**Total Inhalation**	**7E-01**	**7E-01**	**2E-05**
		ND risk contribution	**6E-01**	**6E-01**	**2E-05**
		Risk for Detects only	**9E-02**	**9E-02**	**4E-06**
		Site-related only	**8E-03**	**8E-03**	**2E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0180H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0180H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0180H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.80E-01	1.86E-01	1.12E-01	2.79E-01	9.32E-02	1.0E-08		2E-09	1E-09	3E-09	9E-10	**7E-09**
TRICHLOROETHENE	79-01-6	9.00E-03	2.47E-03	1.48E-03	3.70E-03	1.23E-03	1.0E-06	kidney	2E-09	1E-09	4E-09	1E-09	**9E-09**
TRICHLOROETHENE	79-01-6	9.00E-03	7.40E-04		2.47E-03		3.1E-06	NHL+liver	2E-09		8E-09		**1E-08**
VINYL CHLORIDE	75-01-4	4.20E-03	1.15E-03	6.90E-04	1.73E-03	5.75E-04	4.4E-06		5E-09	3E-09	8E-09	3E-09	**2E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0189H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0189H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0189H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	1.01E-02	1.01E-02	NA	---	---	3.74E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	4.95E-02	N	4.75E-02	4.75E-02	2.00E+00	**2E-02**	**2E-02**	1.76E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	8.15E-02	8.15E-02	1.00E+00	**8E-02**	**8E-02**	3.03E-02	4.90E-05		**1E-06**
1,4-DIOXANE	123-91-1	7.00E-02	N	6.71E-02	6.71E-02	3.00E+01	**2E-03**	**2E-03**	2.49E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	6.71E-03	6.71E-03	2.00E-01	**3E-02**	**3E-02**	2.49E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.85E-01	N	4.65E-01	4.65E-01	2.00E+00	**2E-01**	**2E-01**	1.73E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.30E-01	Y	1.25E-01	1.25E-01	6.00E+01	**2E-03**	**2E-03**	4.63E-02	-		---
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	3.16E-02	3.16E-02	9.00E+00	**4E-03**	**4E-03**	1.18E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	7.40E-02	Y	7.10E-02	7.10E-02	7.00E+00	**1E-02**	**1E-02**	2.64E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	8.63E-02	8.63E-02	4.00E+00	**2E-02**	**2E-02**	3.21E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	5.75E-02	5.75E-02	6.00E+01	**1E-03**	**1E-03**	2.14E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	4.79E-02	4.79E-02	8.00E+02	**6E-05**	**6E-05**	1.78E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	4.10E-01	Y	3.93E-01	3.93E-01	3.00E+01	**1E-02**	**1E-02**	1.46E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	1.20E-01	1.20E-01	NA	---	---	4.45E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	6.50E-01	N	6.23E-01	6.23E-01	5.00E+00	**1E-01**	**1E-01**	2.32E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	4.51E-01	4.51E-01	1.00E+02	**5E-03**	**5E-03**	1.67E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	8.40E-01	Y	8.05E-01	8.05E-01	9.77E+01	**8E-03**	**8E-03**	2.99E-01	2.30E-05		**7E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.70E-01	Y	1.63E-01	1.63E-01	1.00E+03	**2E-04**	**2E-04**	6.05E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	6.23E-01	6.23E-01	NA	---	---	2.32E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	2.40E+02	Y	2.30E+02	2.30E+02	2.00E+02	**1E+00**	**1E+00**	8.55E+01	-		---
M,P-XYLENE	108-38-3	4.80E-01	Y	4.60E-01	4.60E-01	1.00E+02	**5E-03**	**5E-03**	1.71E-01	-		---
METHYLENE CHLORIDE	75-09-2	2.15E-01	N	2.06E-01	2.06E-01	6.00E+02	**3E-04**	**3E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.70E-01	Y	1.63E-01	1.63E-01	1.00E+02	**2E-03**	**2E-03**	6.05E-02	-		---
TETRACHLOROETHENE	127-18-4	2.60E+00	Y	2.49E+00	2.49E+00	4.00E+01	**6E-02**	**6E-02**	9.26E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	1.90E-01	Y	1.82E-01	1.82E-01	2.00E+00	**9E-02**	**9E-02**	M	4.10E-06	M	**4E-07**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	8.00E-03	N	7.67E-03	7.67E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0189H**	**Total Inhalation**	**2E+00**	**2E+00**	**3E-05**
		ND risk contribution	**5E-01**	**5E-01**	**2E-05**
		Risk for Detects only	**1E+00**	**1E+00**	**1E-05**
		Site-related only	**2E-01**	**2E-01**	**8E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0189H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0189H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0189H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.15E-01	5.89E-02	3.53E-02	8.84E-02	2.95E-02	1.0E-08		6E-10	4E-10	9E-10	3E-10	**2E-09**
TRICHLOROETHENE	79-01-6	1.90E-01	5.21E-02	3.12E-02	7.81E-02	2.60E-02	1.0E-06	kidney	5E-08	3E-08	8E-08	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	1.90E-01	1.56E-02		5.21E-02		3.1E-06	NHL+liver	5E-08		2E-07		**2E-07**
VINYL CHLORIDE	75-01-4	8.00E-03	2.19E-03	1.32E-03	3.29E-03	1.10E-03	4.4E-06		1E-08	6E-09	1E-08	5E-09	**3E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0192H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0192H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0192H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	1.05E-02	1.05E-02	NA	---	---	3.92E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	1.78E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	8.63E-02	8.63E-02	1.00E+00	**9E-02**	**9E-02**	3.21E-02	4.90E-05		**2E-06**
1,4-DIOXANE	123-91-1	7.50E-02	N	7.19E-02	7.19E-02	3.00E+01	**2E-03**	**2E-03**	2.67E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	7.19E-03	7.19E-03	2.00E-01	**4E-02**	**4E-02**	2.67E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	4.79E-01	4.79E-01	2.00E+00	**2E-01**	**2E-01**	1.78E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.30E-01	Y	1.25E-01	1.25E-01	6.00E+01	**2E-03**	**2E-03**	4.63E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.50E-02	N	3.36E-02	3.36E-02	9.00E+00	**4E-03**	**4E-03**	1.25E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	7.38E-02	7.38E-02	7.00E+00	**1E-02**	**1E-02**	2.74E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	5.75E-02	5.75E-02	6.00E+01	**1E-03**	**1E-03**	2.14E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	5.27E-02	5.27E-02	8.00E+02	**7E-05**	**7E-05**	1.96E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	1.10E+00	Y	1.05E+00	1.05E+00	3.00E+01	**4E-02**	**4E-02**	3.92E-01	7.80E-06		**3E-06**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	1.25E-01	1.25E-01	NA	---	---	4.63E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	6.71E-01	6.71E-01	5.00E+00	**1E-01**	**1E-01**	2.49E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	4.51E-01	4.51E-01	1.00E+02	**5E-03**	**5E-03**	1.67E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.30E+00	Y	1.25E+00	1.25E+00	9.77E+01	**1E-02**	**1E-02**	4.63E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.00E-01	Y	1.92E-01	1.92E-01	1.00E+03	**2E-04**	**2E-04**	7.12E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	6.71E-01	6.71E-01	NA	---	---	2.49E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.20E+01	Y	1.15E+01	1.15E+01	2.00E+02	**6E-02**	**6E-02**	4.27E+00	-		**---**
M,P-XYLENE	108-38-3	6.00E-01	Y	5.75E-01	5.75E-01	1.00E+02	**6E-03**	**6E-03**	2.14E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	2.25E-01	N	2.16E-01	2.16E-01	6.00E+02	**4E-04**	**4E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.20E-01	Y	2.11E-01	2.11E-01	1.00E+02	**2E-03**	**2E-03**	7.84E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.60E+01	Y	1.53E+01	1.53E+01	4.00E+01	**4E-01**	**4E-01**	5.70E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	4.30E-01	Y	4.12E-01	4.12E-01	2.00E+00	**2E-01**	**2E-01**	M	4.10E-06	M	**9E-07**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	8.50E-03	N	8.15E-03	8.15E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**4E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0192H**	**Total Inhalation**	**1E+00**	**1E+00**	**4E-05**
		ND risk contribution	**6E-01**	**6E-01**	**2E-05**
		Risk for Detects only	**7E-01**	**7E-01**	**2E-05**
		Site-related only	**6E-01**	**6E-01**	**3E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0192H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0192H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0192H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.25E-01	6.16E-02	3.70E-02	9.25E-02	3.08E-02	1.0E-08		6E-10	4E-10	9E-10	3E-10	**2E-09**
TRICHLOROETHENE	79-01-6	4.30E-01	1.18E-01	7.07E-02	1.77E-01	5.89E-02	1.0E-06	kidney	1E-07	7E-08	2E-07	6E-08	**4E-07**
TRICHLOROETHENE	79-01-6	4.30E-01	3.53E-02		1.18E-01		3.1E-06	NHL+liver	1E-07		4E-07		**5E-07**
VINYL CHLORIDE	75-01-4	8.50E-03	2.33E-03	1.40E-03	3.49E-03	1.16E-03	4.4E-06		1E-08	6E-09	2E-08	5E-09	**4E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0193H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0193H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0193H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	6.57E-02	6.57E-02	NA	---	---	2.44E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.12E+00	2.12E+00	2.00E+00	**1E+00**	**1E+00**	7.89E-01	3.00E-05		**2E-05**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	4.99E-01	4.99E-01	1.00E+00	**5E-01**	**5E-01**	1.85E-01	4.90E-05		**9E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	3.46E-01	3.46E-01	3.00E+01	**1E-02**	**1E-02**	1.28E-01	5.00E-06		**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	7.82E-02	7.82E-02	2.00E-01	**4E-01**	**4E-01**	2.90E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.23E+00	2.23E+00	2.00E+00	**1E+00**	**1E+00**	8.30E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	7.38E-02	7.38E-02	9.00E+00	**8E-03**	**8E-03**	2.74E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.02E-01	Y	9.78E-02	9.78E-02	7.00E+00	**1E-02**	**1E-02**	3.63E-02	2.60E-05		**9E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	6.66E-02	6.66E-02	4.00E+00	**2E-02**	**2E-02**	2.48E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	5.75E-02	5.75E-02	8.00E+02	**7E-05**	**7E-05**	2.14E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	4.89E-01	Y	4.69E-01	4.69E-01	3.00E+01	**2E-02**	**2E-02**	1.74E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	6.42E-01	6.42E-01	NA	---	---	2.39E-01	3.70E-05		**9E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	3.72E-01	3.72E-01	5.00E+00	**7E-02**	**7E-02**	1.38E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.74E-01	Y	5.50E-01	5.50E-01	1.00E+02	**6E-03**	**6E-03**	2.04E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.55E+00	Y	1.49E+00	1.49E+00	9.77E+01	**2E-02**	**2E-02**	5.52E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.86E-01	Y	1.78E-01	1.78E-01	1.00E+03	**2E-04**	**2E-04**	6.62E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	3.23E+00	3.23E+00	NA	---	---	1.20E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.15E+01	Y	1.10E+01	1.10E+01	2.00E+02	**6E-02**	**6E-02**	4.10E+00	-		**---**
M,P-XYLENE	108-38-3	6.76E-01	Y	6.48E-01	6.48E-01	1.00E+02	**6E-03**	**6E-03**	2.41E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	6.74E-01	Y	6.46E-01	6.46E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.58E+00	1.58E+00	3.00E+00	**5E-01**	**5E-01**	5.88E-01	3.40E-05		**2E-05**
O-XYLENE	95-47-6	4.34E-01	N	4.16E-01	4.16E-01	1.00E+02	**4E-03**	**4E-03**	1.54E-01	-		**---**
TETRACHLOROETHENE	127-18-4	3.82E+00	Y	3.66E+00	3.66E+00	4.00E+01	**9E-02**	**9E-02**	1.36E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	7.18E-01	Y	6.88E-01	6.88E-01	2.00E+00	**3E-01**	**3E-01**	M	4.10E-06	M	**2E-06**
VINYL ACETATE	108-05-4	3.52E-02	N	3.38E-02	3.38E-02	2.00E+02	**2E-04**	**2E-04**	1.25E-02	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	2.45E-02	2.45E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0193H**	**Total Inhalation**	**4E+00**	**4E+00**	**1E-04**
		ND risk contribution	**4E+00**	**4E+00**	**1E-04**
		Risk for Detects only	**5E-01**	**5E-01**	**2E-05**
		Site-related only	**4E-01**	**4E-01**	**3E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0193H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0193H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0193H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.74E-01	1.85E-01	1.11E-01	2.77E-01	9.23E-02	1.0E-08		2E-09	1E-09	3E-09	9E-10	**7E-09**
TRICHLOROETHENE	79-01-6	7.18E-01	1.97E-01	1.18E-01	2.95E-01	9.84E-02	1.0E-06	kidney	2E-07	1E-07	3E-07	1E-07	**7E-07**
TRICHLOROETHENE	79-01-6	7.18E-01	5.90E-02		1.97E-01		3.1E-06	NHL+liver	2E-07		6E-07		**8E-07**
VINYL CHLORIDE	75-01-4	2.56E-02	7.00E-03	4.20E-03	1.05E-02	3.50E-03	4.4E-06		3E-08	2E-08	5E-08	2E-08	**1E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0194H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0194H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0194H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	6.57E-02	6.57E-02	NA	---	---	2.44E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.12E+00	2.12E+00	2.00E+00	**1E+00**	**1E+00**	7.89E-01	3.00E-05		**2E-05**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	4.99E-01	4.99E-01	1.00E+00	**5E-01**	**5E-01**	1.85E-01	4.90E-05		**9E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	3.46E-01	3.46E-01	3.00E+01	**1E-02**	**1E-02**	1.28E-01	5.00E-06		**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	7.82E-02	7.82E-02	2.00E-01	**4E-01**	**4E-01**	2.90E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.23E+00	2.23E+00	2.00E+00	**1E+00**	**1E+00**	8.30E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	7.38E-02	7.38E-02	9.00E+00	**8E-03**	**8E-03**	2.74E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.22E-01	Y	1.17E-01	1.17E-01	7.00E+00	**2E-02**	**2E-02**	4.35E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	6.66E-02	6.66E-02	4.00E+00	**2E-02**	**2E-02**	2.48E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	5.75E-02	5.75E-02	8.00E+02	**7E-05**	**7E-05**	2.14E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	5.69E-01	Y	5.46E-01	5.46E-01	3.00E+01	**2E-02**	**2E-02**	2.03E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	6.42E-01	6.42E-01	NA	---	---	2.39E-01	3.70E-05		**9E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	3.72E-01	3.72E-01	5.00E+00	**7E-02**	**7E-02**	1.38E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.46E-01	Y	5.24E-01	5.24E-01	1.00E+02	**5E-03**	**5E-03**	1.94E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	7.40E-01	Y	7.10E-01	7.10E-01	9.77E+01	**7E-03**	**7E-03**	2.64E-01	2.30E-05		**6E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	4.23E-01	Y	4.06E-01	4.06E-01	1.00E+03	**4E-04**	**4E-04**	1.51E-01	2.50E-06		**4E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	3.23E+00	3.23E+00	NA	---	---	1.20E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	9.27E+00	Y	8.89E+00	8.89E+00	2.00E+02	**4E-02**	**4E-02**	3.30E+00	-		**---**
M,P-XYLENE	108-38-3	1.14E+00	Y	1.09E+00	1.09E+00	1.00E+02	**1E-02**	**1E-02**	4.06E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	6.67E-01	Y	6.40E-01	6.40E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.58E+00	1.58E+00	3.00E+00	**5E-01**	**5E-01**	5.88E-01	3.40E-05		**2E-05**
O-XYLENE	95-47-6	4.34E-01	N	4.16E-01	4.16E-01	1.00E+02	**4E-03**	**4E-03**	1.54E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.06E+01	Y	1.02E+01	1.02E+01	4.00E+01	**3E-01**	**3E-01**	3.78E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	7.18E-01	Y	6.88E-01	6.88E-01	2.00E+00	**3E-01**	**3E-01**	M	4.10E-06	M	**2E-06**
VINYL ACETATE	108-05-4	3.52E-02	N	3.38E-02	3.38E-02	2.00E+02	**2E-04**	**2E-04**	1.25E-02	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	2.45E-02	2.45E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0194H**	**Total Inhalation**	**4E+00**	**4E+00**	**1E-04**
		ND risk contribution	**4E+00**	**4E+00**	**1E-04**
		Risk for Detects only	**7E-01**	**7E-01**	**1E-05**
		Site-related only	**6E-01**	**6E-01**	**3E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0194H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0194H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0194H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.67E-01	1.83E-01	1.10E-01	2.74E-01	9.14E-02	1.0E-08		2E-09	1E-09	3E-09	9E-10	**7E-09**
TRICHLOROETHENE	79-01-6	7.18E-01	1.97E-01	1.18E-01	2.95E-01	9.84E-02	1.0E-06	kidney	2E-07	1E-07	3E-07	1E-07	**7E-07**
TRICHLOROETHENE	79-01-6	7.18E-01	5.90E-02		1.97E-01		3.1E-06	NHL+liver	2E-07		6E-07		**8E-07**
VINYL CHLORIDE	75-01-4	2.56E-02	7.00E-03	4.20E-03	1.05E-02	3.50E-03	4.4E-06		3E-08	2E-08	5E-08	2E-08	**1E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0195H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0195H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0195H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	6.57E-02	6.57E-02	NA	---	---	2.44E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.12E+00	2.12E+00	2.00E+00	**1E+00**	**1E+00**	7.89E-01	3.00E-05		**2E-05**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	4.99E-01	4.99E-01	1.00E+00	**5E-01**	**5E-01**	1.85E-01	4.90E-05		**9E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	3.46E-01	3.46E-01	3.00E+01	**1E-02**	**1E-02**	1.28E-01	5.00E-06		**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	7.82E-02	7.82E-02	2.00E-01	**4E-01**	**4E-01**	2.90E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.23E+00	2.23E+00	2.00E+00	**1E+00**	**1E+00**	8.30E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	5.35E+00	Y	5.13E+00	5.13E+00	6.00E+01	**9E-02**	**9E-02**	1.91E+00	-		---
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	7.38E-02	7.38E-02	9.00E+00	**8E-03**	**8E-03**	2.74E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.24E-01	Y	1.19E-01	1.19E-01	7.00E+00	**2E-02**	**2E-02**	4.42E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	6.66E-02	6.66E-02	4.00E+00	**2E-02**	**2E-02**	2.48E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	1.59E+00	Y	1.52E+00	1.52E+00	6.00E+01	**3E-02**	**3E-02**	5.66E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	5.75E-02	5.75E-02	8.00E+02	**7E-05**	**7E-05**	2.14E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	6.26E-01	Y	6.00E-01	6.00E-01	3.00E+01	**2E-02**	**2E-02**	2.23E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	6.42E-01	6.42E-01	NA	---	---	2.39E-01	3.70E-05		**9E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	3.72E-01	3.72E-01	5.00E+00	**7E-02**	**7E-02**	1.38E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.96E-01	Y	4.76E-01	4.76E-01	1.00E+02	**5E-03**	**5E-03**	1.77E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	5.55E-01	Y	5.32E-01	5.32E-01	9.77E+01	**5E-03**	**5E-03**	1.98E-01	2.30E-05		**5E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	7.33E-01	Y	7.03E-01	7.03E-01	1.00E+03	**7E-04**	**7E-04**	2.61E-01	2.50E-06		**7E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	3.23E+00	3.23E+00	NA	---	---	1.20E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	2.05E+01	Y	1.97E+01	1.97E+01	2.00E+02	**1E-01**	**1E-01**	7.30E+00	-		---
M,P-XYLENE	108-38-3	2.76E+00	Y	2.65E+00	2.65E+00	1.00E+02	**3E-02**	**3E-02**	9.83E-01	-		---
METHYLENE CHLORIDE	75-09-2	5.69E-01	Y	5.46E-01	5.46E-01	6.00E+02	**9E-04**	**9E-04**	M	1.00E-08	M	**6E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.58E+00	1.58E+00	3.00E+00	**5E-01**	**5E-01**	5.88E-01	3.40E-05		**2E-05**
O-XYLENE	95-47-6	1.44E+00	Y	1.38E+00	1.38E+00	1.00E+02	**1E-02**	**1E-02**	5.13E-01	-		---
TETRACHLOROETHENE	127-18-4	2.27E+00	Y	2.18E+00	2.18E+00	4.00E+01	**5E-02**	**5E-02**	8.08E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	5.95E-02	Y	5.71E-02	5.71E-02	2.00E+00	**3E-02**	**3E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	3.52E-02	N	3.38E-02	3.38E-02	2.00E+02	**2E-04**	**2E-04**	1.25E-02	-		---
VINYL CHLORIDE	75-01-4	2.56E-02	N	2.45E-02	2.45E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0195H**	**Total Inhalation**	**4E+00**	**4E+00**	**1E-04**
		ND risk contribution	**4E+00**	**4E+00**	**1E-04**
		Risk for Detects only	**4E-01**	**4E-01**	**9E-06**
		Site-related only	**9E-02**	**9E-02**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0195H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0195H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0195H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.69E-01	1.56E-01	9.35E-02	2.34E-01	7.79E-02	1.0E-08		2E-09	9E-10	2E-09	8E-10	**6E-09**
TRICHLOROETHENE	79-01-6	5.95E-02	1.63E-02	9.78E-03	2.45E-02	8.15E-03	1.0E-06	kidney	2E-08	1E-08	2E-08	8E-09	**6E-08**
TRICHLOROETHENE	79-01-6	5.95E-02	4.89E-03		1.63E-02		3.1E-06	NHL+liver	2E-08		5E-08		**7E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	7.00E-03	4.20E-03	1.05E-02	3.50E-03	4.4E-06		3E-08	2E-08	5E-08	2E-08	**1E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0197H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0197H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0197H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.50E-02	N	2.40E-02	2.40E-02	NA	---	---	8.90E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	1.78E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	1.10E-01	N	1.05E-01	1.05E-01	1.00E+00	**1E-01**	**1E-01**	3.92E-02	4.90E-05		**2E-06**
1,4-DIOXANE	123-91-1	8.50E-02	N	8.15E-02	8.15E-02	3.00E+01	**3E-03**	**3E-03**	3.03E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	1.15E-02	1.15E-02	2.00E-01	**6E-02**	**6E-02**	4.27E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	4.79E-01	4.79E-01	2.00E+00	**2E-01**	**2E-01**	1.78E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	2.20E-01	Y	2.11E-01	2.11E-01	6.00E+01	**4E-03**	**4E-03**	7.84E-02	-		---
1,2-DIBROMOETHANE	106-93-4	4.45E-02	N	4.27E-02	4.27E-02	9.00E+00	**5E-03**	**5E-03**	1.58E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	8.50E-02	Y	8.15E-02	8.15E-02	7.00E+00	**1E-02**	**1E-02**	3.03E-02	2.60E-05		**8E-07**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	9.59E-02	9.59E-02	4.00E+00	**2E-02**	**2E-02**	3.56E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	8.50E-02	N	8.15E-02	8.15E-02	6.00E+01	**1E-03**	**1E-03**	3.03E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	2.10E-01	Y	2.01E-01	2.01E-01	8.00E+02	**3E-04**	**3E-04**	7.48E-02	1.10E-05		**8E-07**
BENZENE	71-43-2	4.30E-01	Y	4.12E-01	4.12E-01	3.00E+01	**1E-02**	**1E-02**	1.53E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	1.05E-01	1.05E-01	NA	---	---	3.92E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	6.00E-01	N	5.75E-01	5.75E-01	5.00E+00	**1E-01**	**1E-01**	2.14E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	4.22E-01	4.22E-01	1.00E+02	**4E-03**	**4E-03**	1.57E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	1.10E+00	Y	1.05E+00	1.05E+00	9.77E+01	**1E-02**	**1E-02**	3.92E-01	2.30E-05		**9E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	3.50E-01	Y	3.36E-01	3.36E-01	1.00E+03	**3E-04**	**3E-04**	1.25E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.25E-01	N	4.08E-01	4.08E-01	NA	---	---	1.51E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	2.90E+01	Y	2.78E+01	2.78E+01	2.00E+02	**1E-01**	**1E-01**	1.03E+01	-		---
M,P-XYLENE	108-38-3	1.20E+00	Y	1.15E+00	1.15E+00	1.00E+02	**1E-02**	**1E-02**	4.27E-01	-		---
METHYLENE CHLORIDE	75-09-2	4.80E-01	Y	4.60E-01	4.60E-01	6.00E+02	**8E-04**	**8E-04**	M	1.00E-08	M	**5E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	3.10E-01	Y	2.97E-01	2.97E-01	1.00E+02	**3E-03**	**3E-03**	1.10E-01	-		---
TETRACHLOROETHENE	127-18-4	2.30E+01	Y	2.21E+01	2.21E+01	4.00E+01	**6E-01**	**6E-01**	8.19E+00	2.60E-07		**2E-06**
TRICHLOROETHENE	79-01-6	5.80E+00	Y	5.56E+00	5.56E+00	2.00E+00	**3E+00**	**3E+00**	M	4.10E-06	M	**1E-05**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	3.95E-03	N	3.79E-03	3.79E-03	8.00E+01	**5E-05**	**5E-05**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0197H**	**Total Inhalation**	**4E+00**	**4E+00**	**4E-05**
		ND risk contribution	**6E-01**	**6E-01**	**2E-05**
		Risk for Detects only	**4E+00**	**4E+00**	**3E-05**
		Site-related only	**3E+00**	**3E+00**	**1E-05**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0197H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0197H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0197H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.80E-01	1.32E-01	7.89E-02	1.97E-01	6.58E-02	1.0E-08		1E-09	8E-10	2E-09	7E-10	**5E-09**
TRICHLOROETHENE	79-01-6	5.80E+00	1.59E+00	9.53E-01	2.38E+00	7.95E-01	1.0E-06	kidney	2E-06	1E-06	2E-06	8E-07	**6E-06**
TRICHLOROETHENE	79-01-6	5.80E+00	4.77E-01		1.59E+00		3.1E-06	NHL+liver	1E-06		5E-06		**6E-06**
VINYL CHLORIDE	75-01-4	3.95E-03	1.08E-03	6.49E-04	1.62E-03	5.41E-04	4.4E-06		5E-09	3E-09	7E-09	2E-09	**2E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0225H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0225H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0225H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	6.57E-02	6.57E-02	NA	---	---	2.44E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.12E+00	2.12E+00	2.00E+00	**1E+00**	**1E+00**	7.89E-01	3.00E-05		**2E-05**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	4.99E-01	4.99E-01	1.00E+00	**5E-01**	**5E-01**	1.85E-01	4.90E-05		**9E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	3.46E-01	3.46E-01	3.00E+01	**1E-02**	**1E-02**	1.28E-01	5.00E-06		**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	7.82E-02	7.82E-02	2.00E-01	**4E-01**	**4E-01**	2.90E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.23E+00	2.23E+00	2.00E+00	**1E+00**	**1E+00**	8.30E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	7.38E-02	7.38E-02	9.00E+00	**8E-03**	**8E-03**	2.74E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	3.26E-01	Y	3.13E-01	3.13E-01	7.00E+00	**4E-02**	**4E-02**	1.16E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	6.66E-02	6.66E-02	4.00E+00	**2E-02**	**2E-02**	2.48E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.80E-01	Y	9.40E-01	9.40E-01	8.00E+02	**1E-03**	**1E-03**	3.49E-01	1.10E-05		**4E-06**
BENZENE	71-43-2	5.21E-01	Y	5.00E-01	5.00E-01	3.00E+01	**2E-02**	**2E-02**	1.86E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	6.42E-01	6.42E-01	NA	---	---	2.39E-01	3.70E-05		**9E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	3.72E-01	3.72E-01	5.00E+00	**7E-02**	**7E-02**	1.38E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	6.87E-01	Y	6.59E-01	6.59E-01	1.00E+02	**7E-03**	**7E-03**	2.45E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	3.59E-01	Y	3.44E-01	3.44E-01	9.77E+01	**4E-03**	**4E-03**	1.28E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	6.29E-01	Y	6.03E-01	6.03E-01	1.00E+03	**6E-04**	**6E-04**	2.24E-01	2.50E-06		**6E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	3.23E+00	3.23E+00	NA	---	---	1.20E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.24E+01	Y	1.19E+01	1.19E+01	2.00E+02	**6E-02**	**6E-02**	4.42E+00	-		**---**
M,P-XYLENE	108-38-3	2.17E+00	Y	2.08E+00	2.08E+00	1.00E+02	**2E-02**	**2E-02**	7.73E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	7.43E-01	Y	7.12E-01	7.12E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.58E+00	1.58E+00	3.00E+00	**5E-01**	**5E-01**	5.88E-01	3.40E-05		**2E-05**
O-XYLENE	95-47-6	7.24E-01	Y	6.94E-01	6.94E-01	1.00E+02	**7E-03**	**7E-03**	2.58E-01	-		**---**
TETRACHLOROETHENE	127-18-4	2.57E-01	Y	2.46E-01	2.46E-01	4.00E+01	**6E-03**	**6E-03**	9.15E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	6.54E-02	Y	6.27E-02	6.27E-02	2.00E+00	**3E-02**	**3E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	3.52E-02	N	3.38E-02	3.38E-02	2.00E+02	**2E-04**	**2E-04**	1.25E-02	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	2.45E-02	2.45E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0225H**	**Total Inhalation**	**4E+00**	**4E+00**	**1E-04**
		ND risk contribution	**4E+00**	**4E+00**	**1E-04**
		Risk for Detects only	**2E-01**	**2E-01**	**1E-05**
		Site-related only	**5E-02**	**5E-02**	**9E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0225H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0225H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0225H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.43E-01	2.04E-01	1.22E-01	3.05E-01	1.02E-01	1.0E-08		2E-09	1E-09	3E-09	1E-09	**7E-09**
TRICHLOROETHENE	79-01-6	6.54E-02	1.79E-02	1.08E-02	2.69E-02	8.96E-03	1.0E-06	kidney	2E-08	1E-08	3E-08	9E-09	**6E-08**
TRICHLOROETHENE	79-01-6	6.54E-02	5.38E-03		1.79E-02		3.1E-06	NHL+liver	2E-08		6E-08		**7E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	7.00E-03	4.20E-03	1.05E-02	3.50E-03	4.4E-06		3E-08	2E-08	5E-08	2E-08	**1E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0230H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0230H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0230H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.05E-02	N	1.01E-02	1.01E-02	NA	---	---	3.74E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	4.95E-02	N	4.75E-02	4.75E-02	2.00E+00	**2E-02**	**2E-02**	1.76E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	8.15E-02	8.15E-02	1.00E+00	**8E-02**	**8E-02**	3.03E-02	4.90E-05		**1E-06**
1,4-DIOXANE	123-91-1	7.00E-02	N	6.71E-02	6.71E-02	3.00E+01	**2E-03**	**2E-03**	2.49E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	6.71E-03	6.71E-03	2.00E-01	**3E-02**	**3E-02**	2.49E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.85E-01	N	4.65E-01	4.65E-01	2.00E+00	**2E-01**	**2E-01**	1.73E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.90E-01	Y	1.82E-01	1.82E-01	6.00E+01	**3E-03**	**3E-03**	6.77E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.30E-02	N	3.16E-02	3.16E-02	9.00E+00	**4E-03**	**4E-03**	1.18E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	1.34E-01	1.34E-01	7.00E+00	**2E-02**	**2E-02**	4.99E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	9.00E-02	N	8.63E-02	8.63E-02	4.00E+00	**2E-02**	**2E-02**	3.21E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	5.75E-02	5.75E-02	6.00E+01	**1E-03**	**1E-03**	2.14E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.00E-02	N	4.79E-02	4.79E-02	8.00E+02	**6E-05**	**6E-05**	1.78E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	5.30E-01	Y	5.08E-01	5.08E-01	3.00E+01	**2E-02**	**2E-02**	1.89E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.25E-01	N	1.20E-01	1.20E-01	NA	---	---	4.45E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	6.50E-01	N	6.23E-01	6.23E-01	5.00E+00	**1E-01**	**1E-01**	2.32E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.90E-01	Y	3.74E-01	3.74E-01	1.00E+02	**4E-03**	**4E-03**	1.39E-01	6.00E-06		**8E-07**
CHLOROFORM	67-66-3	9.60E-01	Y	9.21E-01	9.21E-01	9.77E+01	**9E-03**	**9E-03**	3.42E-01	2.30E-05		**8E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.50E-01	Y	1.44E-01	1.44E-01	1.00E+03	**1E-04**	**1E-04**	5.34E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	6.23E-01	6.23E-01	NA	---	---	2.32E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	5.50E+01	Y	5.27E+01	5.27E+01	2.00E+02	**3E-01**	**3E-01**	1.96E+01	-		**---**
M,P-XYLENE	108-38-3	5.20E-01	Y	4.99E-01	4.99E-01	1.00E+02	**5E-03**	**5E-03**	1.85E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	2.75E-01	N	2.64E-01	2.64E-01	6.00E+02	**4E-04**	**4E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.00E-01	Y	1.92E-01	1.92E-01	1.00E+02	**2E-03**	**2E-03**	7.12E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.80E-02	Y	4.60E-02	4.60E-02	4.00E+01	**1E-03**	**1E-03**	1.71E-02	2.60E-07		**4E-09**
TRICHLOROETHENE	79-01-6	1.65E-02	N	1.58E-02	1.58E-02	2.00E+00	**8E-03**	**8E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	8.00E-03	N	7.67E-03	7.67E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0230H**	**Total Inhalation**	**9E-01**	**9E-01**	**3E-05**
		ND risk contribution	**5E-01**	**5E-01**	**2E-05**
		Risk for Detects only	**3E-01**	**3E-01**	**1E-05**
		Site-related only	**1E-02**	**1E-02**	**2E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0230H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0230H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0230H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.75E-01	7.53E-02	4.52E-02	1.13E-01	3.77E-02	1.0E-08		8E-10	5E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.65E-02	4.52E-03	2.71E-03	6.78E-03	2.26E-03	1.0E-06	kidney	5E-09	3E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.65E-02	1.36E-03		4.52E-03		3.1E-06	NHL+liver	4E-09		1E-08		**2E-08**
VINYL CHLORIDE	75-01-4	8.00E-03	2.19E-03	1.32E-03	3.29E-03	1.10E-03	4.4E-06		1E-08	6E-09	1E-08	5E-09	**3E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0255H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0255H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0255H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	6.57E-02	6.57E-02	NA	---	---	2.44E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.12E+00	2.12E+00	2.00E+00	**1E+00**	**1E+00**	7.89E-01	3.00E-05		**2E-05**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	4.99E-01	4.99E-01	1.00E+00	**5E-01**	**5E-01**	1.85E-01	4.90E-05		**9E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	3.46E-01	3.46E-01	3.00E+01	**1E-02**	**1E-02**	1.28E-01	5.00E-06		**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	7.82E-02	7.82E-02	2.00E-01	**4E-01**	**4E-01**	2.90E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.23E+00	2.23E+00	2.00E+00	**1E+00**	**1E+00**	8.30E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	7.38E-02	7.38E-02	9.00E+00	**8E-03**	**8E-03**	2.74E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.41E-01	Y	1.35E-01	1.35E-01	7.00E+00	**2E-02**	**2E-02**	5.02E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	6.66E-02	6.66E-02	4.00E+00	**2E-02**	**2E-02**	2.48E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.77E-02	Y	5.53E-02	5.53E-02	8.00E+02	**7E-05**	**7E-05**	2.06E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	6.71E-01	Y	6.43E-01	6.43E-01	3.00E+01	**2E-02**	**2E-02**	2.39E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	6.42E-01	6.42E-01	NA	---	---	2.39E-01	3.70E-05		**9E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	3.72E-01	3.72E-01	5.00E+00	**7E-02**	**7E-02**	1.38E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.87E-01	Y	4.67E-01	4.67E-01	1.00E+02	**5E-03**	**5E-03**	1.73E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.47E+00	Y	1.41E+00	1.41E+00	9.77E+01	**1E-02**	**1E-02**	5.24E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.02E-01	Y	1.94E-01	1.94E-01	1.00E+03	**2E-04**	**2E-04**	7.19E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	3.23E+00	3.23E+00	NA	---	---	1.20E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	2.15E+00	Y	2.06E+00	2.06E+00	2.00E+02	**1E-02**	**1E-02**	7.66E-01	-		**---**
M,P-XYLENE	108-38-3	8.65E-01	N	8.29E-01	8.29E-01	1.00E+02	**8E-03**	**8E-03**	3.08E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	8.82E-01	Y	8.46E-01	8.46E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**9E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.58E+00	1.58E+00	3.00E+00	**5E-01**	**5E-01**	5.88E-01	3.40E-05		**2E-05**
O-XYLENE	95-47-6	4.34E-01	N	4.16E-01	4.16E-01	1.00E+02	**4E-03**	**4E-03**	1.54E-01	-		**---**
TETRACHLOROETHENE	127-18-4	2.69E+00	Y	2.58E+00	2.58E+00	4.00E+01	**6E-02**	**6E-02**	9.58E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	1.91E-01	Y	1.83E-01	1.83E-01	2.00E+00	**9E-02**	**9E-02**	M	4.10E-06	M	**4E-07**
VINYL ACETATE	108-05-4	3.52E-02	N	3.38E-02	3.38E-02	2.00E+02	**2E-04**	**2E-04**	1.25E-02	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	2.45E-02	2.45E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0255H**	**Total Inhalation**	**4E+00**	**4E+00**	**1E-04**
		ND risk contribution	**4E+00**	**4E+00**	**1E-04**
		Risk for Detects only	**2E-01**	**2E-01**	**2E-05**
		Site-related only	**2E-01**	**2E-01**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0255H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0255H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0255H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	8.82E-01	2.42E-01	1.45E-01	3.62E-01	1.21E-01	1.0E-08		2E-09	1E-09	4E-09	1E-09	**9E-09**
TRICHLOROETHENE	79-01-6	1.91E-01	5.23E-02	3.14E-02	7.85E-02	2.62E-02	1.0E-06	kidney	5E-08	3E-08	8E-08	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	1.91E-01	1.57E-02		5.23E-02		3.1E-06	NHL+liver	5E-08		2E-07		**2E-07**
VINYL CHLORIDE	75-01-4	2.56E-02	7.00E-03	4.20E-03	1.05E-02	3.50E-03	4.4E-06		3E-08	2E-08	5E-08	2E-08	**1E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0256H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0256H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0256H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	6.57E-02	6.57E-02	NA	---	---	2.44E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.12E+00	2.12E+00	2.00E+00	**1E+00**	**1E+00**	7.89E-01	3.00E-05		**2E-05**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	4.99E-01	4.99E-01	1.00E+00	**5E-01**	**5E-01**	1.85E-01	4.90E-05		**9E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	3.46E-01	3.46E-01	3.00E+01	**1E-02**	**1E-02**	1.28E-01	5.00E-06		**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	7.82E-02	7.82E-02	2.00E-01	**4E-01**	**4E-01**	2.90E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.23E+00	2.23E+00	2.00E+00	**1E+00**	**1E+00**	8.30E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	7.38E-02	7.38E-02	9.00E+00	**8E-03**	**8E-03**	2.74E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.04E-01	Y	9.97E-02	9.97E-02	7.00E+00	**1E-02**	**1E-02**	3.70E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	6.66E-02	6.66E-02	4.00E+00	**2E-02**	**2E-02**	2.48E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.91E-02	Y	6.63E-02	6.63E-02	8.00E+02	**8E-05**	**8E-05**	2.46E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	5.72E-01	Y	5.48E-01	5.48E-01	3.00E+01	**2E-02**	**2E-02**	2.04E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	6.42E-01	6.42E-01	NA	---	---	2.39E-01	3.70E-05		**9E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	3.72E-01	3.72E-01	5.00E+00	**7E-02**	**7E-02**	1.38E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.86E-01	Y	4.66E-01	4.66E-01	1.00E+02	**5E-03**	**5E-03**	1.73E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	3.49E-01	Y	3.35E-01	3.35E-01	9.77E+01	**3E-03**	**3E-03**	1.24E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.68E-01	Y	1.61E-01	1.61E-01	1.00E+03	**2E-04**	**2E-04**	5.98E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	3.23E+00	3.23E+00	NA	---	---	1.20E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	2.07E+00	Y	1.98E+00	1.98E+00	2.00E+02	**1E-02**	**1E-02**	7.37E-01	-		**---**
M,P-XYLENE	108-38-3	6.85E-01	Y	6.57E-01	6.57E-01	1.00E+02	**7E-03**	**7E-03**	2.44E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	6.77E-01	Y	6.49E-01	6.49E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.58E+00	1.58E+00	3.00E+00	**5E-01**	**5E-01**	5.88E-01	3.40E-05		**2E-05**
O-XYLENE	95-47-6	4.34E-01	N	4.16E-01	4.16E-01	1.00E+02	**4E-03**	**4E-03**	1.54E-01	-		**---**
TETRACHLOROETHENE	127-18-4	1.84E-01	Y	1.76E-01	1.76E-01	4.00E+01	**4E-03**	**4E-03**	6.55E-02	2.60E-07		**2E-08**
TRICHLOROETHENE	79-01-6	6.16E-02	Y	5.91E-02	5.91E-02	2.00E+00	**3E-02**	**3E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	3.52E-02	N	3.38E-02	3.38E-02	2.00E+02	**2E-04**	**2E-04**	1.25E-02	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	2.45E-02	2.45E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0256H**	**Total Inhalation**	**4E+00**	**4E+00**	**1E-04**
		ND risk contribution	**4E+00**	**4E+00**	**1E-04**
		Risk for Detects only	**9E-02**	**9E-02**	**7E-06**
		Site-related only	**5E-02**	**5E-02**	**9E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0256H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0256H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0256H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.77E-01	1.85E-01	1.11E-01	2.78E-01	9.27E-02	1.0E-08		2E-09	1E-09	3E-09	9E-10	**7E-09**
TRICHLOROETHENE	79-01-6	6.16E-02	1.69E-02	1.01E-02	2.53E-02	8.44E-03	1.0E-06	kidney	2E-08	1E-08	3E-08	8E-09	**6E-08**
TRICHLOROETHENE	79-01-6	6.16E-02	5.06E-03		1.69E-02		3.1E-06	NHL+liver	2E-08		5E-08		**7E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	7.00E-03	4.20E-03	1.05E-02	3.50E-03	4.4E-06		3E-08	2E-08	5E-08	2E-08	**1E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0263H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0263H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0263H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	6.57E-02	6.57E-02	NA	---	---	2.44E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	2.22E+01	N	2.12E+01	2.12E+01	2.00E+00	**1E+01**	**1E+01**	7.89E+00	3.00E-05		**2E-04**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	4.99E-01	4.99E-01	1.00E+00	**5E-01**	**5E-01**	1.85E-01	4.90E-05		**9E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	3.46E-01	3.46E-01	3.00E+01	**1E-02**	**1E-02**	1.28E-01	5.00E-06		**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	7.82E-02	7.82E-02	2.00E-01	**4E-01**	**4E-01**	2.90E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.23E+00	2.23E+00	2.00E+00	**1E+00**	**1E+00**	8.30E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	6.53E-01	Y	6.26E-01	6.26E-01	6.00E+01	**1E-02**	**1E-02**	2.33E-01	-		---
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	7.38E-02	7.38E-02	9.00E+00	**8E-03**	**8E-03**	2.74E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	2.88E-01	Y	2.76E-01	2.76E-01	7.00E+00	**4E-02**	**4E-02**	1.03E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	6.66E-02	6.66E-02	4.00E+00	**2E-02**	**2E-02**	2.48E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	6.13E-02	Y	5.88E-02	5.88E-02	8.00E+02	**7E-05**	**7E-05**	2.18E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	1.24E+00	Y	1.19E+00	1.19E+00	3.00E+01	**4E-02**	**4E-02**	4.42E-01	7.80E-06		**3E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	6.42E-01	6.42E-01	NA	---	---	2.39E-01	3.70E-05		**9E-06**
BROMOMETHANE	74-83-9	3.88E+00	N	3.72E+00	3.72E+00	5.00E+00	**7E-01**	**7E-01**	1.38E+00	-		---
CARBON TETRACHLORIDE	56-23-5	5.94E-01	Y	5.70E-01	5.70E-01	1.00E+02	**6E-03**	**6E-03**	2.12E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	4.87E-02	N	4.67E-02	4.67E-02	9.77E+01	**5E-04**	**5E-04**	1.73E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	6.63E-01	Y	6.36E-01	6.36E-01	1.00E+03	**6E-04**	**6E-04**	2.36E-01	2.50E-06		**6E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	3.23E+00	3.23E+00	NA	---	---	1.20E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.54E+01	N	1.47E+01	1.47E+01	2.00E+02	**7E-02**	**7E-02**	5.47E+00	-		---
M,P-XYLENE	108-38-3	1.63E+00	Y	1.56E+00	1.56E+00	1.00E+02	**2E-02**	**2E-02**	5.81E-01	-		---
METHYLENE CHLORIDE	75-09-2	3.47E+00	N	3.33E+00	3.33E+00	6.00E+02	**6E-03**	**6E-03**	M	1.00E-08	M	**3E-08**
NAPHTHALENE	91-20-3	1.65E+00	N	1.58E+00	1.58E+00	3.00E+00	**5E-01**	**5E-01**	5.88E-01	3.40E-05		**2E-05**
O-XYLENE	95-47-6	6.16E-01	Y	5.91E-01	5.91E-01	1.00E+02	**6E-03**	**6E-03**	2.19E-01	-		---
TETRACHLOROETHENE	127-18-4	1.26E+01	Y	1.21E+01	1.21E+01	4.00E+01	**3E-01**	**3E-01**	4.49E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	5.79E-01	Y	5.55E-01	5.55E-01	2.00E+00	**3E-01**	**3E-01**	M	4.10E-06	M	**1E-06**
VINYL ACETATE	108-05-4	3.52E-02	N	3.38E-02	3.38E-02	2.00E+02	**2E-04**	**2E-04**	1.25E-02	-		---
VINYL CHLORIDE	75-01-4	2.56E-02	N	2.45E-02	2.45E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0263H**	**Total Inhalation**	**1E+01**	**1E+01**	**3E-04**
		ND risk contribution	**1E+01**	**1E+01**	**3E-04**
		Risk for Detects only	**7E-01**	**7E-01**	**1E-05**
		Site-related only	**6E-01**	**6E-01**	**3E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0263H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0263H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0263H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.47E+00	9.51E-01	5.70E-01	1.43E+00	4.75E-01	1.0E-08		1E-08	6E-09	1E-08	5E-09	**3E-08**
TRICHLOROETHENE	79-01-6	5.79E-01	1.59E-01	9.52E-02	2.38E-01	7.93E-02	1.0E-06	kidney	2E-07	1E-07	2E-07	8E-08	**6E-07**
TRICHLOROETHENE	79-01-6	5.79E-01	4.76E-02		1.59E-01		3.1E-06	NHL+liver	1E-07		5E-07		**6E-07**
VINYL CHLORIDE	75-01-4	2.56E-02	7.00E-03	4.20E-03	1.05E-02	3.50E-03	4.4E-06		3E-08	2E-08	5E-08	2E-08	**1E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0273H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0273H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0273H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.15E-02	N	1.10E-02	1.10E-02	NA	---	---	4.10E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	5.50E-02	N	5.27E-02	5.27E-02	2.00E+00	**3E-02**	**3E-02**	1.96E-02	3.00E-05		**6E-07**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	8.63E-02	8.63E-02	1.00E+00	**9E-02**	**9E-02**	3.21E-02	4.90E-05		**2E-06**
1,4-DIOXANE	123-91-1	7.50E-02	N	7.19E-02	7.19E-02	3.00E+01	**2E-03**	**2E-03**	2.67E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	7.19E-03	7.19E-03	2.00E-01	**4E-02**	**4E-02**	2.67E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	4.79E-01	4.79E-01	2.00E+00	**2E-01**	**2E-01**	1.78E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.90E-01	Y	5.66E-01	5.66E-01	6.00E+01	**9E-03**	**9E-03**	2.10E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.55E-02	N	3.40E-02	3.40E-02	9.00E+00	**4E-03**	**4E-03**	1.26E-02	6.00E-04		**8E-06**
1,2-DICHLOROETHANE	107-06-2	1.60E-01	Y	1.53E-01	1.53E-01	7.00E+00	**2E-02**	**2E-02**	5.70E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	9.59E-02	9.59E-02	4.00E+00	**2E-02**	**2E-02**	3.56E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	2.10E-01	Y	2.01E-01	2.01E-01	6.00E+01	**3E-03**	**3E-03**	7.48E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	5.27E-02	5.27E-02	8.00E+02	**7E-05**	**7E-05**	1.96E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	4.50E-01	Y	4.32E-01	4.32E-01	3.00E+01	**1E-02**	**1E-02**	1.60E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.35E-01	N	1.29E-01	1.29E-01	NA	---	---	4.81E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	6.71E-01	6.71E-01	5.00E+00	**1E-01**	**1E-01**	2.49E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	3.84E-01	3.84E-01	1.00E+02	**4E-03**	**4E-03**	1.42E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	5.30E-01	Y	5.08E-01	5.08E-01	9.77E+01	**5E-03**	**5E-03**	1.89E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.50E-01	Y	1.44E-01	1.44E-01	1.00E+03	**1E-04**	**1E-04**	5.34E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	6.71E-01	6.71E-01	NA	---	---	2.49E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	2.30E+01	Y	2.21E+01	2.21E+01	2.00E+02	**1E-01**	**1E-01**	8.19E+00	-		**---**
M,P-XYLENE	108-38-3	5.10E-01	Y	4.89E-01	4.89E-01	1.00E+02	**5E-03**	**5E-03**	1.82E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	2.30E-01	N	2.21E-01	2.21E-01	6.00E+02	**4E-04**	**4E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.70E-01	Y	1.63E-01	1.63E-01	1.00E+02	**2E-03**	**2E-03**	6.05E-02	-		**---**
TETRACHLOROETHENE	127-18-4	2.70E+00	Y	2.59E+00	2.59E+00	4.00E+01	**6E-02**	**6E-02**	9.62E-01	2.60E-07		**3E-07**
TRICHLOROETHENE	79-01-6	1.75E-02	N	1.68E-02	1.68E-02	2.00E+00	**8E-03**	**8E-03**	M	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	8.50E-03	N	8.15E-03	8.15E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**4E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0273H**	**Total Inhalation**	**8E-01**	**8E-01**	**3E-05**
		ND risk contribution	**6E-01**	**6E-01**	**2E-05**
		Risk for Detects only	**2E-01**	**2E-01**	**8E-06**
		Site-related only	**8E-02**	**8E-02**	**5E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0273H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0273H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0273H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.30E-01	6.30E-02	3.78E-02	9.45E-02	3.15E-02	1.0E-08		6E-10	4E-10	9E-10	3E-10	**2E-09**
TRICHLOROETHENE	79-01-6	1.75E-02	4.79E-03	2.88E-03	7.19E-03	2.40E-03	1.0E-06	kidney	5E-09	3E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.75E-02	1.44E-03		4.79E-03		3.1E-06	NHL+liver	4E-09		1E-08		**2E-08**
VINYL CHLORIDE	75-01-4	8.50E-03	2.33E-03	1.40E-03	3.49E-03	1.16E-03	4.4E-06		1E-08	6E-09	2E-08	5E-09	**4E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0274H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0274H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0274H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-02	N	2.30E-02	2.30E-02	NA	---	---	8.55E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	4.90E-02	N	4.70E-02	4.70E-02	2.00E+00	**2E-02**	**2E-02**	1.75E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	1.01E-01	1.01E-01	1.00E+00	**1E-01**	**1E-01**	3.74E-02	4.90E-05		**2E-06**
1,4-DIOXANE	123-91-1	8.00E-02	N	7.67E-02	7.67E-02	3.00E+01	**3E-03**	**3E-03**	2.85E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	1.15E-02	1.15E-02	2.00E-01	**6E-02**	**6E-02**	4.27E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.95E-01	N	4.75E-01	4.75E-01	2.00E+00	**2E-01**	**2E-01**	1.76E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E-01	Y	1.53E-01	1.53E-01	6.00E+01	**3E-03**	**3E-03**	5.70E-02	-		---
1,2-DIBROMOETHANE	106-93-4	4.30E-02	N	4.12E-02	4.12E-02	9.00E+00	**5E-03**	**5E-03**	1.53E-02	6.00E-04		**9E-06**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	1.34E-01	1.34E-01	7.00E+00	**2E-02**	**2E-02**	4.99E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	8.00E-02	N	7.67E-02	7.67E-02	6.00E+01	**1E-03**	**1E-03**	2.85E-02	-		---
1,4-DICHLOROBENZENE	106-46-7	4.55E-02	N	4.36E-02	4.36E-02	8.00E+02	**5E-05**	**5E-05**	1.62E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	3.60E-01	Y	3.45E-01	3.45E-01	3.00E+01	**1E-02**	**1E-02**	1.28E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	1.05E-01	1.05E-01	NA	---	---	3.92E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	6.00E-01	N	5.75E-01	5.75E-01	5.00E+00	**1E-01**	**1E-01**	2.14E-01	-		---
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	3.93E-01	3.93E-01	1.00E+02	**4E-03**	**4E-03**	1.46E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	5.10E-01	Y	4.89E-01	4.89E-01	9.77E+01	**5E-03**	**5E-03**	1.82E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.60E+00	Y	1.53E+00	1.53E+00	1.00E+03	**2E-03**	**2E-03**	5.70E-01	2.50E-06		**1E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.10E-01	N	3.93E-01	3.93E-01	NA	---	---	1.46E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	4.40E+01	Y	4.22E+01	4.22E+01	2.00E+02	**2E-01**	**2E-01**	1.57E+01	-		---
M,P-XYLENE	108-38-3	6.20E+00	Y	5.95E+00	5.95E+00	1.00E+02	**6E-02**	**6E-02**	2.21E+00	-		---
METHYLENE CHLORIDE	75-09-2	6.20E-01	Y	5.95E-01	5.95E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**6E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	1.40E+00	Y	1.34E+00	1.34E+00	1.00E+02	**1E-02**	**1E-02**	4.99E-01	-		---
TETRACHLOROETHENE	127-18-4	1.20E+01	Y	1.15E+01	1.15E+01	4.00E+01	**3E-01**	**3E-01**	4.27E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	3.50E-02	Y	3.36E-02	3.36E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**7E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	3.80E-03	N	3.64E-03	3.64E-03	8.00E+01	**5E-05**	**5E-05**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0274H**	**Total Inhalation**	**1E+00**	**1E+00**	**3E-05**
		ND risk contribution	**6E-01**	**6E-01**	**2E-05**
		Risk for Detects only	**6E-01**	**6E-01**	**1E-05**
		Site-related only	**3E-01**	**3E-01**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0274H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0274H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0274H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.20E-01	1.70E-01	1.02E-01	2.55E-01	8.49E-02	1.0E-08		2E-09	1E-09	3E-09	8E-10	**6E-09**
TRICHLOROETHENE	79-01-6	3.50E-02	9.59E-03	5.75E-03	1.44E-02	4.79E-03	1.0E-06	kidney	1E-08	6E-09	1E-08	5E-09	**3E-08**
TRICHLOROETHENE	79-01-6	3.50E-02	2.88E-03		9.59E-03		3.1E-06	NHL+liver	9E-09		3E-08		**4E-08**
VINYL CHLORIDE	75-01-4	3.80E-03	1.04E-03	6.25E-04	1.56E-03	5.21E-04	4.4E-06		5E-09	3E-09	7E-09	2E-09	**2E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0277H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0277H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0277H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.15E-02	N	1.10E-02	1.10E-02	NA	---	---	4.10E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	1.78E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	8.63E-02	8.63E-02	1.00E+00	**9E-02**	**9E-02**	3.21E-02	4.90E-05		**2E-06**
1,4-DIOXANE	123-91-1	7.50E-02	N	7.19E-02	7.19E-02	3.00E+01	**2E-03**	**2E-03**	2.67E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	7.19E-03	7.19E-03	2.00E-01	**4E-02**	**4E-02**	2.67E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	4.79E-01	4.79E-01	2.00E+00	**2E-01**	**2E-01**	1.78E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E-01	Y	1.15E-01	1.15E-01	6.00E+01	**2E-03**	**2E-03**	4.27E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.50E-02	N	3.36E-02	3.36E-02	9.00E+00	**4E-03**	**4E-03**	1.25E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	2.60E-01	Y	2.49E-01	2.49E-01	7.00E+00	**4E-02**	**4E-02**	9.26E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	9.59E-02	9.59E-02	4.00E+00	**2E-02**	**2E-02**	3.56E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	6.50E-02	N	6.23E-02	6.23E-02	6.00E+01	**1E-03**	**1E-03**	2.32E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	5.27E-02	5.27E-02	8.00E+02	**7E-05**	**7E-05**	1.96E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	4.00E-01	Y	3.84E-01	3.84E-01	3.00E+01	**1E-02**	**1E-02**	1.42E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.35E-01	N	1.29E-01	1.29E-01	NA	---	---	4.81E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	6.71E-01	6.71E-01	5.00E+00	**1E-01**	**1E-01**	2.49E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	3.84E-01	3.84E-01	1.00E+02	**4E-03**	**4E-03**	1.42E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	4.90E-01	Y	4.70E-01	4.70E-01	9.77E+01	**5E-03**	**5E-03**	1.75E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.40E-01	Y	2.30E-01	2.30E-01	1.00E+03	**2E-04**	**2E-04**	8.55E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	6.71E-01	6.71E-01	NA	---	---	2.49E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	8.00E+00	Y	7.67E+00	7.67E+00	2.00E+02	**4E-02**	**4E-02**	2.85E+00	-		**---**
M,P-XYLENE	108-38-3	9.00E-01	Y	8.63E-01	8.63E-01	1.00E+02	**9E-03**	**9E-03**	3.21E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.40E+00	Y	3.26E+00	3.26E+00	6.00E+02	**5E-03**	**5E-03**	M	1.00E-08	M	**3E-08**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.60E-01	Y	2.49E-01	2.49E-01	1.00E+02	**2E-03**	**2E-03**	9.26E-02	-		**---**
TETRACHLOROETHENE	127-18-4	5.00E+00	Y	4.79E+00	4.79E+00	4.00E+01	**1E-01**	**1E-01**	1.78E+00	2.60E-07		**5E-07**
TRICHLOROETHENE	79-01-6	1.75E-02	N	1.68E-02	1.68E-02	2.00E+00	**8E-03**	**8E-03**	M	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	8.50E-03	N	8.15E-03	8.15E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**4E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0277H**	**Total Inhalation**	**8E-01**	**8E-01**	**3E-05**
		ND risk contribution	**6E-01**	**6E-01**	**2E-05**
		Risk for Detects only	**2E-01**	**2E-01**	**9E-06**
		Site-related only	**1E-01**	**1E-01**	**7E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0277H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0277H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0277H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.40E+00	9.32E-01	5.59E-01	1.40E+00	4.66E-01	1.0E-08		9E-09	6E-09	1E-08	5E-09	**3E-08**
TRICHLOROETHENE	79-01-6	1.75E-02	4.79E-03	2.88E-03	7.19E-03	2.40E-03	1.0E-06	kidney	5E-09	3E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.75E-02	1.44E-03		4.79E-03		3.1E-06	NHL+liver	4E-09		1E-08		**2E-08**
VINYL CHLORIDE	75-01-4	8.50E-03	2.33E-03	1.40E-03	3.49E-03	1.16E-03	4.4E-06		1E-08	6E-09	2E-08	5E-09	**4E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0302H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0302H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0302H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.00E-02	N	9.59E-03	9.59E-03	NA	---	---	3.56E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	4.65E-02	N	4.46E-02	4.46E-02	2.00E+00	**2E-02**	**2E-02**	1.66E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	8.00E-02	N	7.67E-02	7.67E-02	1.00E+00	**8E-02**	**8E-02**	2.85E-02	4.90E-05		**1E-06**
1,4-DIOXANE	123-91-1	7.00E-02	N	6.71E-02	6.71E-02	3.00E+01	**2E-03**	**2E-03**	2.49E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	6.50E-03	N	6.23E-03	6.23E-03	2.00E-01	**3E-02**	**3E-02**	2.32E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.55E-01	N	4.36E-01	4.36E-01	2.00E+00	**2E-01**	**2E-01**	1.62E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.60E-01	Y	1.53E-01	1.53E-01	6.00E+01	**3E-03**	**3E-03**	5.70E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.10E-02	N	2.97E-02	2.97E-02	9.00E+00	**3E-03**	**3E-03**	1.10E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	9.80E-02	Y	9.40E-02	9.40E-02	7.00E+00	**1E-02**	**1E-02**	3.49E-02	2.60E-05		**9E-07**
1,2-DICHLOROPROPANE	78-87-5	8.50E-02	N	8.15E-02	8.15E-02	4.00E+00	**2E-02**	**2E-02**	3.03E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	5.50E-02	N	5.27E-02	5.27E-02	6.00E+01	**9E-04**	**9E-04**	1.96E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.90E-02	N	4.70E-02	4.70E-02	8.00E+02	**6E-05**	**6E-05**	1.75E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	4.80E-01	Y	4.60E-01	4.60E-01	3.00E+01	**2E-02**	**2E-02**	1.71E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.20E-01	N	1.15E-01	1.15E-01	NA	---	---	4.27E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	6.00E-01	N	5.75E-01	5.75E-01	5.00E+00	**1E-01**	**1E-01**	2.14E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.90E-01	Y	3.74E-01	3.74E-01	1.00E+02	**4E-03**	**4E-03**	1.39E-01	6.00E-06		**8E-07**
CHLOROFORM	67-66-3	3.70E-01	Y	3.55E-01	3.55E-01	9.77E+01	**4E-03**	**4E-03**	1.32E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.30E-01	Y	1.25E-01	1.25E-01	1.00E+03	**1E-04**	**1E-04**	4.63E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.00E-01	N	5.75E-01	5.75E-01	NA	---	---	2.14E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.50E+01	Y	1.44E+01	1.44E+01	2.00E+02	**7E-02**	**7E-02**	5.34E+00	-		**---**
M,P-XYLENE	108-38-3	5.40E-01	Y	5.18E-01	5.18E-01	1.00E+02	**5E-03**	**5E-03**	1.92E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	2.50E-01	N	2.40E-01	2.40E-01	6.00E+02	**4E-04**	**4E-04**	M	1.00E-08	M	**2E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.70E-01	Y	2.59E-01	2.59E-01	1.00E+02	**3E-03**	**3E-03**	9.62E-02	-		**---**
TETRACHLOROETHENE	127-18-4	3.40E-01	Y	3.26E-01	3.26E-01	4.00E+01	**8E-03**	**8E-03**	1.21E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	1.55E-02	N	1.49E-02	1.49E-02	2.00E+00	**7E-03**	**7E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	7.50E-03	N	7.19E-03	7.19E-03	8.00E+01	**9E-05**	**9E-05**	M	4.40E-06	M	**3E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0302H**	**Total Inhalation**	**6E-01**	**6E-01**	**2E-05**
		ND risk contribution	**5E-01**	**5E-01**	**2E-05**
		Risk for Detects only	**1E-01**	**1E-01**	**6E-06**
		Site-related only	**2E-02**	**2E-02**	**2E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0302H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0302H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0302H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.50E-01	6.85E-02	4.11E-02	1.03E-01	3.42E-02	1.0E-08		7E-10	4E-10	1E-09	3E-10	**2E-09**
TRICHLOROETHENE	79-01-6	1.55E-02	4.25E-03	2.55E-03	6.37E-03	2.12E-03	1.0E-06	kidney	4E-09	3E-09	6E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.55E-02	1.27E-03		4.25E-03		3.1E-06	NHL+liver	4E-09		1E-08		**2E-08**
VINYL CHLORIDE	75-01-4	7.50E-03	2.05E-03	1.23E-03	3.08E-03	1.03E-03	4.4E-06		9E-09	5E-09	1E-08	5E-09	**3E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0315H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0315H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0315H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	1.05E-02	1.05E-02	NA	---	---	3.92E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	1.78E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	8.63E-02	8.63E-02	1.00E+00	**9E-02**	**9E-02**	3.21E-02	4.90E-05		**2E-06**
1,4-DIOXANE	123-91-1	7.50E-02	N	7.19E-02	7.19E-02	3.00E+01	**2E-03**	**2E-03**	2.67E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	6.71E-03	6.71E-03	2.00E-01	**3E-02**	**3E-02**	2.49E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	4.79E-01	4.79E-01	2.00E+00	**2E-01**	**2E-01**	1.78E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	5.50E-02	N	5.27E-02	5.27E-02	6.00E+01	**9E-04**	**9E-04**	1.96E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.45E-02	N	3.31E-02	3.31E-02	9.00E+00	**4E-03**	**4E-03**	1.23E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	1.34E-01	1.34E-01	7.00E+00	**2E-02**	**2E-02**	4.99E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	5.75E-02	5.75E-02	6.00E+01	**1E-03**	**1E-03**	2.14E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.20E-01	Y	8.82E-01	8.82E-01	8.00E+02	**1E-03**	**1E-03**	3.28E-01	1.10E-05		**4E-06**
BENZENE	71-43-2	4.30E-01	Y	4.12E-01	4.12E-01	3.00E+01	**1E-02**	**1E-02**	1.53E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	1.25E-01	1.25E-01	NA	---	---	4.63E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	6.71E-01	6.71E-01	5.00E+00	**1E-01**	**1E-01**	2.49E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	3.93E-01	3.93E-01	1.00E+02	**4E-03**	**4E-03**	1.46E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	3.90E-01	Y	3.74E-01	3.74E-01	9.77E+01	**4E-03**	**4E-03**	1.39E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.40E-01	Y	1.34E-01	1.34E-01	1.00E+03	**1E-04**	**1E-04**	4.99E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	6.71E-01	6.71E-01	NA	---	---	2.49E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	2.60E+01	Y	2.49E+01	2.49E+01	2.00E+02	**1E-01**	**1E-01**	9.26E+00	-		**---**
M,P-XYLENE	108-38-3	4.40E-01	Y	4.22E-01	4.22E-01	1.00E+02	**4E-03**	**4E-03**	1.57E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	2.60E-01	N	2.49E-01	2.49E-01	6.00E+02	**4E-04**	**4E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.40E-01	Y	1.34E-01	1.34E-01	1.00E+02	**1E-03**	**1E-03**	4.99E-02	-		**---**
TETRACHLOROETHENE	127-18-4	2.30E+00	Y	2.21E+00	2.21E+00	4.00E+01	**6E-02**	**6E-02**	8.19E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	3.00E-01	Y	2.88E-01	2.88E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**6E-07**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	8.50E-03	N	8.15E-03	8.15E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**4E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0315H**	**Total Inhalation**	**9E-01**	**9E-01**	**3E-05**
		ND risk contribution	**5E-01**	**5E-01**	**2E-05**
		Risk for Detects only	**4E-01**	**4E-01**	**1E-05**
		Site-related only	**2E-01**	**2E-01**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0315H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0315H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0315H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.60E-01	7.12E-02	4.27E-02	1.07E-01	3.56E-02	1.0E-08		7E-10	4E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	3.00E-01	8.22E-02	4.93E-02	1.23E-01	4.11E-02	1.0E-06	kidney	8E-08	5E-08	1E-07	4E-08	**3E-07**
TRICHLOROETHENE	79-01-6	3.00E-01	2.47E-02		8.22E-02		3.1E-06	NHL+liver	8E-08		3E-07		**3E-07**
VINYL CHLORIDE	75-01-4	8.50E-03	2.33E-03	1.40E-03	3.49E-03	1.16E-03	4.4E-06		1E-08	6E-09	2E-08	5E-09	**4E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0329H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0329H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0329H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-02	N	2.30E-02	2.30E-02	NA	---	---	8.55E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	4.90E-02	N	4.70E-02	4.70E-02	2.00E+00	**2E-02**	**2E-02**	1.75E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	1.01E-01	1.01E-01	1.00E+00	**1E-01**	**1E-01**	3.74E-02	4.90E-05		**2E-06**
1,4-DIOXANE	123-91-1	8.00E-02	N	7.67E-02	7.67E-02	3.00E+01	**3E-03**	**3E-03**	2.85E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.20E-02	N	1.15E-02	1.15E-02	2.00E-01	**6E-02**	**6E-02**	4.27E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.95E-01	N	4.75E-01	4.75E-01	2.00E+00	**2E-01**	**2E-01**	1.76E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	3.40E-01	Y	3.26E-01	3.26E-01	6.00E+01	**5E-03**	**5E-03**	1.21E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.30E-02	N	4.12E-02	4.12E-02	9.00E+00	**5E-03**	**5E-03**	1.53E-02	6.00E-04		**9E-06**
1,2-DICHLOROETHANE	107-06-2	7.20E-02	Y	6.90E-02	6.90E-02	7.00E+00	**1E-02**	**1E-02**	2.56E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	8.00E-02	N	7.67E-02	7.67E-02	6.00E+01	**1E-03**	**1E-03**	2.85E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.55E-02	N	4.36E-02	4.36E-02	8.00E+02	**5E-05**	**5E-05**	1.62E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	3.80E-01	Y	3.64E-01	3.64E-01	3.00E+01	**1E-02**	**1E-02**	1.35E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	1.05E-01	1.05E-01	NA	---	---	3.92E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	6.00E-01	N	5.75E-01	5.75E-01	5.00E+00	**1E-01**	**1E-01**	2.14E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	4.03E-01	4.03E-01	1.00E+02	**4E-03**	**4E-03**	1.50E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	7.60E-02	Y	7.29E-02	7.29E-02	9.77E+01	**7E-04**	**7E-04**	2.71E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.60E-01	Y	2.49E-01	2.49E-01	1.00E+03	**2E-04**	**2E-04**	9.26E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.10E-01	N	3.93E-01	3.93E-01	NA	---	---	1.46E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.10E+01	Y	1.05E+01	1.05E+01	2.00E+02	**5E-02**	**5E-02**	3.92E+00	-		**---**
M,P-XYLENE	108-38-3	1.10E+00	Y	1.05E+00	1.05E+00	1.00E+02	**1E-02**	**1E-02**	3.92E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	4.90E-01	Y	4.70E-01	4.70E-01	6.00E+02	**8E-04**	**8E-04**	M	1.00E-08	M	**5E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	4.10E-01	Y	3.93E-01	3.93E-01	1.00E+02	**4E-03**	**4E-03**	1.46E-01	-		**---**
TETRACHLOROETHENE	127-18-4	9.20E-02	Y	8.82E-02	8.82E-02	4.00E+01	**2E-03**	**2E-03**	3.28E-02	2.60E-07		**9E-09**
TRICHLOROETHENE	79-01-6	8.00E-03	N	7.67E-03	7.67E-03	2.00E+00	**4E-03**	**4E-03**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	3.80E-03	N	3.64E-03	3.64E-03	8.00E+01	**5E-05**	**5E-05**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0329H**	**Total Inhalation**	**7E-01**	**7E-01**	**2E-05**
		ND risk contribution	**6E-01**	**6E-01**	**2E-05**
		Risk for Detects only	**1E-01**	**1E-01**	**3E-06**
		Site-related only	**9E-03**	**9E-03**	**2E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0329H**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0329H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0329H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	4.90E-01	1.34E-01	8.05E-02	2.01E-01	6.71E-02	1.0E-08		1E-09	8E-10	2E-09	7E-10	**5E-09**
TRICHLOROETHENE	79-01-6	8.00E-03	2.19E-03	1.32E-03	3.29E-03	1.10E-03	1.0E-06	kidney	2E-09	1E-09	3E-09	1E-09	**8E-09**
TRICHLOROETHENE	79-01-6	8.00E-03	6.58E-04		2.19E-03		3.1E-06	NHL+liver	2E-09		7E-09		**9E-09**
VINYL CHLORIDE	75-01-4	3.80E-03	1.04E-03	6.25E-04	1.56E-03	5.21E-04	4.4E-06		5E-09	3E-09	7E-09	2E-09	**2E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0334H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0334H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0334H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	6.57E-02	6.57E-02	NA	---	---	2.44E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.12E+00	2.12E+00	2.00E+00	**1E+00**	**1E+00**	7.89E-01	3.00E-05		**2E-05**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	4.99E-01	4.99E-01	1.00E+00	**5E-01**	**5E-01**	1.85E-01	4.90E-05		**9E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	3.46E-01	3.46E-01	3.00E+01	**1E-02**	**1E-02**	1.28E-01	5.00E-06		**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	7.82E-02	7.82E-02	2.00E-01	**4E-01**	**4E-01**	2.90E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.23E+00	2.23E+00	2.00E+00	**1E+00**	**1E+00**	8.30E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	7.38E-02	7.38E-02	9.00E+00	**8E-03**	**8E-03**	2.74E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	9.92E-02	Y	9.51E-02	9.51E-02	7.00E+00	**1E-02**	**1E-02**	3.53E-02	2.60E-05		**9E-07**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	6.66E-02	6.66E-02	4.00E+00	**2E-02**	**2E-02**	2.48E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	8.42E-02	Y	8.07E-02	8.07E-02	8.00E+02	**1E-04**	**1E-04**	3.00E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	5.78E-01	Y	5.54E-01	5.54E-01	3.00E+01	**2E-02**	**2E-02**	2.06E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	6.42E-01	6.42E-01	NA	---	---	2.39E-01	3.70E-05		**9E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	3.72E-01	3.72E-01	5.00E+00	**7E-02**	**7E-02**	1.38E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.40E-01	Y	5.18E-01	5.18E-01	1.00E+02	**5E-03**	**5E-03**	1.92E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	1.67E+00	Y	1.60E+00	1.60E+00	9.77E+01	**2E-02**	**2E-02**	5.95E-01	2.30E-05		**1E-05**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.71E-01	Y	2.60E-01	2.60E-01	1.00E+03	**3E-04**	**3E-04**	9.65E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	3.23E+00	3.23E+00	NA	---	---	1.20E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	7.94E+00	Y	7.61E+00	7.61E+00	2.00E+02	**4E-02**	**4E-02**	2.83E+00	-		**---**
M,P-XYLENE	108-38-3	8.45E-01	Y	8.10E-01	8.10E-01	1.00E+02	**8E-03**	**8E-03**	3.01E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	6.49E-01	Y	6.22E-01	6.22E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**6E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.58E+00	1.58E+00	3.00E+00	**5E-01**	**5E-01**	5.88E-01	3.40E-05		**2E-05**
O-XYLENE	95-47-6	4.34E-01	N	4.16E-01	4.16E-01	1.00E+02	**4E-03**	**4E-03**	1.54E-01	-		**---**
TETRACHLOROETHENE	127-18-4	9.64E-02	Y	9.24E-02	9.24E-02	4.00E+01	**2E-03**	**2E-03**	3.43E-02	2.60E-07		**9E-09**
TRICHLOROETHENE	79-01-6	5.35E-02	N	5.13E-02	5.13E-02	2.00E+00	**3E-02**	**3E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	3.52E-02	N	3.38E-02	3.38E-02	2.00E+02	**2E-04**	**2E-04**	1.25E-02	-		**---**
VINYL CHLORIDE	75-01-4	2.56E-02	N	2.45E-02	2.45E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0334H**	**Total Inhalation**	**4E+00**	**4E+00**	**1E-04**
		ND risk contribution	**4E+00**	**4E+00**	**1E-04**
		Risk for Detects only	**1E-01**	**1E-01**	**2E-05**
		Site-related only	**4E-02**	**4E-02**	**9E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0334H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0334H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0334H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.49E-01	1.78E-01	1.07E-01	2.67E-01	8.89E-02	1.0E-08		2E-09	1E-09	3E-09	9E-10	**6E-09**
TRICHLOROETHENE	79-01-6	5.35E-02	1.47E-02	8.79E-03	2.20E-02	7.33E-03	1.0E-06	kidney	1E-08	9E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	5.35E-02	4.40E-03		1.47E-02		3.1E-06	NHL+liver	1E-08		5E-08		**6E-08**
VINYL CHLORIDE	75-01-4	2.56E-02	7.00E-03	4.20E-03	1.05E-02	3.50E-03	4.4E-06		3E-08	2E-08	5E-08	2E-08	**1E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0336H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0336H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0336H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.40E-02	N	2.30E-02	2.30E-02	NA	---	---	8.55E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	4.90E-02	N	4.70E-02	4.70E-02	2.00E+00	**2E-02**	**2E-02**	1.75E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	1.01E-01	1.01E-01	1.00E+00	**1E-01**	**1E-01**	3.74E-02	4.90E-05		**2E-06**
1,4-DIOXANE	123-91-1	8.00E-02	N	7.67E-02	7.67E-02	3.00E+01	**3E-03**	**3E-03**	2.85E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.15E-02	N	1.10E-02	1.10E-02	2.00E-01	**6E-02**	**6E-02**	4.10E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	4.90E-01	N	4.70E-01	4.70E-01	2.00E+00	**2E-01**	**2E-01**	1.75E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	2.20E-01	Y	2.11E-01	2.11E-01	6.00E+01	**4E-03**	**4E-03**	7.84E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.25E-02	N	4.08E-02	4.08E-02	9.00E+00	**5E-03**	**5E-03**	1.51E-02	6.00E-04		**9E-06**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	7.38E-02	7.38E-02	7.00E+00	**1E-02**	**1E-02**	2.74E-02	2.60E-05		**7E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	8.00E-02	N	7.67E-02	7.67E-02	6.00E+01	**1E-03**	**1E-03**	2.85E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.50E-02	N	4.32E-02	4.32E-02	8.00E+02	**5E-05**	**5E-05**	1.60E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	5.50E-01	Y	5.27E-01	5.27E-01	3.00E+01	**2E-02**	**2E-02**	1.96E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	1.10E-01	N	1.05E-01	1.05E-01	NA	---	---	3.92E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	5.50E-01	N	5.27E-01	5.27E-01	5.00E+00	**1E-01**	**1E-01**	1.96E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	4.03E-01	4.03E-01	1.00E+02	**4E-03**	**4E-03**	1.50E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	3.10E-01	Y	2.97E-01	2.97E-01	9.77E+01	**3E-03**	**3E-03**	1.10E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.10E-01	Y	2.01E-01	2.01E-01	1.00E+03	**2E-04**	**2E-04**	7.48E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.05E-01	N	3.88E-01	3.88E-01	NA	---	---	1.44E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.90E+01	Y	1.82E+01	1.82E+01	2.00E+02	**9E-02**	**9E-02**	6.77E+00	-		**---**
M,P-XYLENE	108-38-3	6.90E-01	Y	6.62E-01	6.62E-01	1.00E+02	**7E-03**	**7E-03**	2.46E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	5.00E-01	Y	4.79E-01	4.79E-01	6.00E+02	**8E-04**	**8E-04**	M	1.00E-08	M	**5E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.30E-01	Y	2.21E-01	2.21E-01	1.00E+02	**2E-03**	**2E-03**	8.19E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.60E+01	Y	1.53E+01	1.53E+01	4.00E+01	**4E-01**	**4E-01**	5.70E+00	2.60E-07		**1E-06**
TRICHLOROETHENE	79-01-6	1.80E-02	Y	1.73E-02	1.73E-02	2.00E+00	**9E-03**	**9E-03**	M	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	3.80E-03	N	3.64E-03	3.64E-03	8.00E+01	**5E-05**	**5E-05**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0336H**	**Total Inhalation**	**1E+00**	**1E+00**	**2E-05**
		ND risk contribution	**6E-01**	**6E-01**	**2E-05**
		Risk for Detects only	**5E-01**	**5E-01**	**7E-06**
		Site-related only	**4E-01**	**4E-01**	**2E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0336H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0336H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0336H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.00E-01	1.37E-01	8.22E-02	2.05E-01	6.85E-02	1.0E-08		1E-09	8E-10	2E-09	7E-10	**5E-09**
TRICHLOROETHENE	79-01-6	1.80E-02	4.93E-03	2.96E-03	7.40E-03	2.47E-03	1.0E-06	kidney	5E-09	3E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.80E-02	1.48E-03		4.93E-03		3.1E-06	NHL+liver	5E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	3.80E-03	1.04E-03	6.25E-04	1.56E-03	5.21E-04	4.4E-06		5E-09	3E-09	7E-09	2E-09	**2E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0347H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0347H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0347H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.55E-02	N	2.45E-02	2.45E-02	NA	---	---	9.08E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	5.00E-02	N	4.79E-02	4.79E-02	2.00E+00	**2E-02**	**2E-02**	1.78E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	1.15E-01	N	1.10E-01	1.10E-01	1.00E+00	**1E-01**	**1E-01**	4.10E-02	4.90E-05		**2E-06**
1,4-DIOXANE	123-91-1	8.50E-02	N	8.15E-02	8.15E-02	3.00E+01	**3E-03**	**3E-03**	3.03E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.25E-02	N	1.20E-02	1.20E-02	2.00E-01	**6E-02**	**6E-02**	4.45E-03	1.60E-05		**7E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	4.79E-01	4.79E-01	2.00E+00	**2E-01**	**2E-01**	1.78E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.30E-01	Y	4.12E-01	4.12E-01	6.00E+01	**7E-03**	**7E-03**	1.53E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.55E-02	N	4.36E-02	4.36E-02	9.00E+00	**5E-03**	**5E-03**	1.62E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	1.20E+00	Y	1.15E+00	1.15E+00	7.00E+00	**2E-01**	**2E-01**	4.27E-01	2.60E-05		**1E-05**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	9.59E-02	9.59E-02	4.00E+00	**2E-02**	**2E-02**	3.56E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	8.50E-02	N	8.15E-02	8.15E-02	6.00E+01	**1E-03**	**1E-03**	3.03E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	4.80E-02	N	4.60E-02	4.60E-02	8.00E+02	**6E-05**	**6E-05**	1.71E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	4.90E-01	Y	4.70E-01	4.70E-01	3.00E+01	**2E-02**	**2E-02**	1.75E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.15E-01	N	1.10E-01	1.10E-01	NA	---	---	4.10E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	6.00E-01	N	5.75E-01	5.75E-01	5.00E+00	**1E-01**	**1E-01**	2.14E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	4.03E-01	4.03E-01	1.00E+02	**4E-03**	**4E-03**	1.50E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	1.00E+00	Y	9.59E-01	9.59E-01	9.77E+01	**1E-02**	**1E-02**	3.56E-01	2.30E-05		**8E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	6.30E-01	Y	6.04E-01	6.04E-01	1.00E+03	**6E-04**	**6E-04**	2.24E-01	2.50E-06		**6E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	4.35E-01	N	4.17E-01	4.17E-01	NA	---	---	1.55E-01	2.20E-05		**3E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.50E+01	Y	1.44E+01	1.44E+01	2.00E+02	**7E-02**	**7E-02**	5.34E+00	-		**---**
M,P-XYLENE	108-38-3	2.00E+00	Y	1.92E+00	1.92E+00	1.00E+02	**2E-02**	**2E-02**	7.12E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	5.00E-01	Y	4.79E-01	4.79E-01	6.00E+02	**8E-04**	**8E-04**	M	1.00E-08	M	**5E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	6.40E-01	Y	6.14E-01	6.14E-01	1.00E+02	**6E-03**	**6E-03**	2.28E-01	-		**---**
TETRACHLOROETHENE	127-18-4	9.00E-02	Y	8.63E-02	8.63E-02	4.00E+01	**2E-03**	**2E-03**	3.21E-02	2.60E-07		**8E-09**
TRICHLOROETHENE	79-01-6	2.70E-02	Y	2.59E-02	2.59E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	4.05E-03	N	3.88E-03	3.88E-03	8.00E+01	**5E-05**	**5E-05**	M	4.40E-06	M	**2E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0347H**	**Total Inhalation**	**9E-01**	**9E-01**	**4E-05**
		ND risk contribution	**6E-01**	**6E-01**	**2E-05**
		Risk for Detects only	**3E-01**	**3E-01**	**2E-05**
		Site-related only	**2E-02**	**2E-02**	**2E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0347H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0347H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0347H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.00E-01	1.37E-01	8.22E-02	2.05E-01	6.85E-02	1.0E-08		1E-09	8E-10	2E-09	7E-10	**5E-09**
TRICHLOROETHENE	79-01-6	2.70E-02	7.40E-03	4.44E-03	1.11E-02	3.70E-03	1.0E-06	kidney	7E-09	4E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.70E-02	2.22E-03		7.40E-03		3.1E-06	NHL+liver	7E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	4.05E-03	1.11E-03	6.66E-04	1.66E-03	5.55E-04	4.4E-06		5E-09	3E-09	7E-09	2E-09	**2E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**365S**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**365S**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**365S**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.30E-02	N	1.25E-02	1.25E-02	NA	---	---	4.63E-03	5.80E-05		**3E-07**
1,3-BUTADIENE	106-99-0	6.00E-02	N	5.75E-02	5.75E-02	2.00E+00	**3E-02**	**3E-02**	2.14E-02	3.00E-05		**6E-07**
BENZYL CHLORIDE	100-44-7	1.05E-01	N	1.01E-01	1.01E-01	1.00E+00	**1E-01**	**1E-01**	3.74E-02	4.90E-05		**2E-06**
1,4-DIOXANE	123-91-1	9.00E-02	N	8.63E-02	8.63E-02	3.00E+01	**3E-03**	**3E-03**	3.21E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.50E-03	N	8.15E-03	8.15E-03	2.00E-01	**4E-02**	**4E-02**	3.03E-03	1.60E-05		**5E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	6.00E-01	N	5.75E-01	5.75E-01	2.00E+00	**3E-01**	**3E-01**	2.14E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	2.20E-01	Y	2.11E-01	2.11E-01	6.00E+01	**4E-03**	**4E-03**	7.84E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	4.05E-02	N	3.88E-02	3.88E-02	9.00E+00	**4E-03**	**4E-03**	1.44E-02	6.00E-04		**9E-06**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	1.05E-01	1.05E-01	7.00E+00	**2E-02**	**2E-02**	3.92E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	1.10E-01	N	1.05E-01	1.05E-01	4.00E+00	**3E-02**	**3E-02**	3.92E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	7.00E-02	N	6.71E-02	6.71E-02	6.00E+01	**1E-03**	**1E-03**	2.49E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.50E-02	N	6.23E-02	6.23E-02	8.00E+02	**8E-05**	**8E-05**	2.32E-02	1.10E-05		**3E-07**
BENZENE	71-43-2	4.60E-01	Y	4.41E-01	4.41E-01	3.00E+01	**1E-02**	**1E-02**	1.64E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.55E-01	N	1.49E-01	1.49E-01	NA	---	---	5.52E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	8.00E-01	N	7.67E-01	7.67E-01	5.00E+00	**2E-01**	**2E-01**	2.85E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	3.64E-01	3.64E-01	1.00E+02	**4E-03**	**4E-03**	1.35E-01	6.00E-06		**8E-07**
CHLOROFORM	67-66-3	1.00E-01	Y	9.59E-02	9.59E-02	9.77E+01	**1E-03**	**1E-03**	3.56E-02	2.30E-05		**8E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	5.30E-01	Y	5.08E-01	5.08E-01	1.00E+03	**5E-04**	**5E-04**	1.89E-01	2.50E-06		**5E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	8.00E-01	N	7.67E-01	7.67E-01	NA	---	---	2.85E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	6.90E+01	Y	6.62E+01	6.62E+01	2.00E+02	**3E-01**	**3E-01**	2.46E+01	-		**---**
M,P-XYLENE	108-38-3	1.90E+00	Y	1.82E+00	1.82E+00	1.00E+02	**2E-02**	**2E-02**	6.77E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	6.00E-01	Y	5.75E-01	5.75E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**6E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	6.10E-01	Y	5.85E-01	5.85E-01	1.00E+02	**6E-03**	**6E-03**	2.17E-01	-		**---**
TETRACHLOROETHENE	127-18-4	3.10E-01	Y	2.97E-01	2.97E-01	4.00E+01	**7E-03**	**7E-03**	1.10E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.00E-02	N	1.92E-02	1.92E-02	2.00E+00	**1E-02**	**1E-02**	M	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	1.00E-02	N	9.59E-03	9.59E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**4E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**365S**	**Total Inhalation**	**1E+00**	**1E+00**	**2E-05**
		ND risk contribution	**7E-01**	**7E-01**	**2E-05**
		Risk for Detects only	**4E-01**	**4E-01**	**4E-06**
		Site-related only	**2E-02**	**2E-02**	**3E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**365S**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**365S**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**365S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.00E-01	1.64E-01	9.86E-02	2.47E-01	8.22E-02	1.0E-08		2E-09	1E-09	2E-09	8E-10	**6E-09**
TRICHLOROETHENE	79-01-6	2.00E-02	5.48E-03	3.29E-03	8.22E-03	2.74E-03	1.0E-06	kidney	5E-09	3E-09	8E-09	3E-09	**2E-08**
TRICHLOROETHENE	79-01-6	2.00E-02	1.64E-03		5.48E-03		3.1E-06	NHL+liver	5E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	1.00E-02	2.74E-03	1.64E-03	4.11E-03	1.37E-03	4.4E-06		1E-08	7E-09	2E-08	6E-09	**4E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0366C**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0366C**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0366C**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	6.57E-02	6.57E-02	NA	---	---	2.44E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.12E+00	2.12E+00	2.00E+00	**1E+00**	**1E+00**	7.89E-01	3.00E-05		**2E-05**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	4.99E-01	4.99E-01	1.00E+00	**5E-01**	**5E-01**	1.85E-01	4.90E-05		**9E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	3.46E-01	3.46E-01	3.00E+01	**1E-02**	**1E-02**	1.28E-01	5.00E-06		**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	7.82E-02	7.82E-02	2.00E-01	**4E-01**	**4E-01**	2.90E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.23E+00	2.23E+00	2.00E+00	**1E+00**	**1E+00**	8.30E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.11E-01	Y	3.94E-01	3.94E-01	6.00E+01	**7E-03**	**7E-03**	1.46E-01	-		---
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	7.38E-02	7.38E-02	9.00E+00	**8E-03**	**8E-03**	2.74E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.84E-01	Y	1.76E-01	1.76E-01	7.00E+00	**3E-02**	**3E-02**	6.55E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	6.66E-02	6.66E-02	4.00E+00	**2E-02**	**2E-02**	2.48E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	1.80E-01	Y	1.73E-01	1.73E-01	8.00E+02	**2E-04**	**2E-04**	6.41E-02	1.10E-05		**7E-07**
BENZENE	71-43-2	7.83E-01	Y	7.51E-01	7.51E-01	3.00E+01	**3E-02**	**3E-02**	2.79E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	6.42E-01	6.42E-01	NA	---	---	2.39E-01	3.70E-05		**9E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	3.72E-01	3.72E-01	5.00E+00	**7E-02**	**7E-02**	1.38E-01	-		---
CARBON TETRACHLORIDE	56-23-5	5.67E-01	Y	5.44E-01	5.44E-01	1.00E+02	**5E-03**	**5E-03**	2.02E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	6.04E-01	Y	5.79E-01	5.79E-01	9.77E+01	**6E-03**	**6E-03**	2.15E-01	2.30E-05		**5E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	4.90E+00	Y	4.70E+00	4.70E+00	1.00E+03	**5E-03**	**5E-03**	1.75E+00	2.50E-06		**4E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	3.23E+00	3.23E+00	NA	---	---	1.20E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.27E+01	Y	1.22E+01	1.22E+01	2.00E+02	**6E-02**	**6E-02**	4.52E+00	-		---
M,P-XYLENE	108-38-3	1.22E+01	Y	1.17E+01	1.17E+01	1.00E+02	**1E-01**	**1E-01**	4.35E+00	-		---
METHYLENE CHLORIDE	75-09-2	7.74E+00	Y	7.42E+00	7.42E+00	6.00E+02	**1E-02**	**1E-02**	M	1.00E-08	M	**8E-08**
NAPHTHALENE	91-20-3	1.65E+00	N	1.58E+00	1.58E+00	3.00E+00	**5E-01**	**5E-01**	5.88E-01	3.40E-05		**2E-05**
O-XYLENE	95-47-6	2.42E+00	Y	2.32E+00	2.32E+00	1.00E+02	**2E-02**	**2E-02**	8.62E-01	-		---
TETRACHLOROETHENE	127-18-4	1.07E+00	Y	1.03E+00	1.03E+00	4.00E+01	**3E-02**	**3E-02**	3.81E-01	2.60E-07		**1E-07**
TRICHLOROETHENE	79-01-6	1.40E-01	Y	1.34E-01	1.34E-01	2.00E+00	**7E-02**	**7E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	3.52E-02	N	3.38E-02	3.38E-02	2.00E+02	**2E-04**	**2E-04**	1.25E-02	-		---
VINYL CHLORIDE	75-01-4	2.56E-02	N	2.45E-02	2.45E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0366C**	**Total Inhalation**	**4E+00**	**4E+00**	**1E-04**
		ND risk contribution	**4E+00**	**4E+00**	**1E-04**
		Risk for Detects only	**4E-01**	**4E-01**	**2E-05**
		Site-related only	**1E-01**	**1E-01**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0366C**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0366C**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0366C**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	7.74E+00	2.12E+00	1.27E+00	3.18E+00	1.06E+00	1.0E-08		2E-08	1E-08	3E-08	1E-08	**8E-08**
TRICHLOROETHENE	79-01-6	1.40E-01	3.84E-02	2.30E-02	5.75E-02	1.92E-02	1.0E-06	kidney	4E-08	2E-08	6E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.40E-01	1.15E-02		3.84E-02		3.1E-06	NHL+liver	4E-08		1E-07		**2E-07**
VINYL CHLORIDE	75-01-4	2.56E-02	7.00E-03	4.20E-03	1.05E-02	3.50E-03	4.4E-06		3E-08	2E-08	5E-08	2E-08	**1E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0381H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0381H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0381H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.15E-02	N	1.10E-02	1.10E-02	NA	---	---	4.10E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	5.50E-02	N	5.27E-02	5.27E-02	2.00E+00	**3E-02**	**3E-02**	1.96E-02	3.00E-05		**6E-07**
BENZYL CHLORIDE	100-44-7	9.50E-02	N	9.11E-02	9.11E-02	1.00E+00	**9E-02**	**9E-02**	3.38E-02	4.90E-05		**2E-06**
1,4-DIOXANE	123-91-1	4.30E-01	Y	4.12E-01	4.12E-01	3.00E+01	**1E-02**	**1E-02**	1.53E-01	5.00E-06		**8E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.50E-03	N	7.19E-03	7.19E-03	2.00E-01	**4E-02**	**4E-02**	2.67E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.50E-01	N	5.27E-01	5.27E-01	2.00E+00	**3E-01**	**3E-01**	1.96E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	2.10E-01	Y	2.01E-01	2.01E-01	6.00E+01	**3E-03**	**3E-03**	7.48E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.65E-02	N	3.50E-02	3.50E-02	9.00E+00	**4E-03**	**4E-03**	1.30E-02	6.00E-04		**8E-06**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	1.05E-01	1.05E-01	7.00E+00	**2E-02**	**2E-02**	3.92E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	1.00E-01	N	9.59E-02	9.59E-02	4.00E+00	**2E-02**	**2E-02**	3.56E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	6.50E-02	N	6.23E-02	6.23E-02	6.00E+01	**1E-03**	**1E-03**	2.32E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	5.50E-02	N	5.27E-02	5.27E-02	8.00E+02	**7E-05**	**7E-05**	1.96E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	7.60E-01	Y	7.29E-01	7.29E-01	3.00E+01	**2E-02**	**2E-02**	2.71E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	1.40E-01	N	1.34E-01	1.34E-01	NA	---	---	4.99E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	6.71E-01	6.71E-01	5.00E+00	**1E-01**	**1E-01**	2.49E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	3.93E-01	3.93E-01	1.00E+02	**4E-03**	**4E-03**	1.46E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	9.60E-01	Y	9.21E-01	9.21E-01	9.77E+01	**9E-03**	**9E-03**	3.42E-01	2.30E-05		**8E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	2.40E+00	Y	2.30E+00	2.30E+00	1.00E+03	**2E-03**	**2E-03**	8.55E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.00E-01	N	6.71E-01	6.71E-01	NA	---	---	2.49E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	2.40E+01	Y	2.30E+01	2.30E+01	2.00E+02	**1E-01**	**1E-01**	8.55E+00	-		**---**
M,P-XYLENE	108-38-3	1.00E+01	Y	9.59E+00	9.59E+00	1.00E+02	**1E-01**	**1E-01**	3.56E+00	-		**---**
METHYLENE CHLORIDE	75-09-2	2.80E-01	N	2.68E-01	2.68E-01	6.00E+02	**4E-04**	**4E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.70E+00	Y	2.59E+00	2.59E+00	1.00E+02	**3E-02**	**3E-02**	9.62E-01	-		**---**
TETRACHLOROETHENE	127-18-4	6.20E-02	Y	5.95E-02	5.95E-02	4.00E+01	**1E-03**	**1E-03**	2.21E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	1.80E-02	N	1.73E-02	1.73E-02	2.00E+00	**9E-03**	**9E-03**	M	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	9.00E-03	N	8.63E-03	8.63E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**4E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0381H**	**Total Inhalation**	**9E-01**	**9E-01**	**3E-05**
		ND risk contribution	**6E-01**	**6E-01**	**2E-05**
		Risk for Detects only	**3E-01**	**3E-01**	**1E-05**
		Site-related only	**2E-02**	**2E-02**	**8E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0381H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0381H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0381H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.80E-01	7.67E-02	4.60E-02	1.15E-01	3.84E-02	1.0E-08		8E-10	5E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.80E-02	4.93E-03	2.96E-03	7.40E-03	2.47E-03	1.0E-06	kidney	5E-09	3E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.80E-02	1.48E-03		4.93E-03		3.1E-06	NHL+liver	5E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	9.00E-03	2.47E-03	1.48E-03	3.70E-03	1.23E-03	4.4E-06		1E-08	7E-09	2E-08	5E-09	**4E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0392H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0392H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0392H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	2.30E-02	N	2.21E-02	2.21E-02	NA	---	---	8.19E-03	5.80E-05		**5E-07**
1,3-BUTADIENE	106-99-0	1.10E-01	N	1.05E-01	1.05E-01	2.00E+00	**5E-02**	**5E-02**	3.92E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	1.85E-01	N	1.77E-01	1.77E-01	1.00E+00	**2E-01**	**2E-01**	6.59E-02	4.90E-05		**3E-06**
1,4-DIOXANE	123-91-1	1.55E-01	N	1.49E-01	1.49E-01	3.00E+01	**5E-03**	**5E-03**	5.52E-02	5.00E-06		**3E-07**
1,1,2-TRICHLOROETHANE	79-00-5	1.50E-02	N	1.44E-02	1.44E-02	2.00E-01	**7E-02**	**7E-02**	5.34E-03	1.60E-05		**9E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	1.05E+00	N	1.01E+00	1.01E+00	2.00E+00	**5E-01**	**5E-01**	3.74E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	4.60E-01	Y	4.41E-01	4.41E-01	6.00E+01	**7E-03**	**7E-03**	1.64E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	6.71E-02	6.71E-02	9.00E+00	**7E-03**	**7E-03**	2.49E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	8.40E-02	Y	8.05E-02	8.05E-02	7.00E+00	**1E-02**	**1E-02**	2.99E-02	2.60E-05		**8E-07**
1,2-DICHLOROPROPANE	78-87-5	2.00E-01	N	1.92E-01	1.92E-01	4.00E+00	**5E-02**	**5E-02**	7.12E-02	3.70E-06		**3E-07**
1,3,5-Trimethylbenzene	108-67-8	1.30E-01	N	1.25E-01	1.25E-01	6.00E+01	**2E-03**	**2E-03**	4.63E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	1.10E-01	N	1.05E-01	1.05E-01	8.00E+02	**1E-04**	**1E-04**	3.92E-02	1.10E-05		**4E-07**
BENZENE	71-43-2	6.30E-01	Y	6.04E-01	6.04E-01	3.00E+01	**2E-02**	**2E-02**	2.24E-01	7.80E-06		**2E-06**
BROMODICHLOROMETHANE	75-27-4	2.75E-01	N	2.64E-01	2.64E-01	NA	---	---	9.79E-02	3.70E-05		**4E-06**
BROMOMETHANE	74-83-9	1.45E+00	N	1.39E+00	1.39E+00	5.00E+00	**3E-01**	**3E-01**	5.16E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	3.64E-01	3.64E-01	1.00E+02	**4E-03**	**4E-03**	1.35E-01	6.00E-06		**8E-07**
CHLOROFORM	67-66-3	2.70E-01	Y	2.59E-01	2.59E-01	9.77E+01	**3E-03**	**3E-03**	9.62E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	3.00E-01	Y	2.88E-01	2.88E-01	1.00E+03	**3E-04**	**3E-04**	1.07E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	1.40E+00	N	1.34E+00	1.34E+00	NA	---	---	4.99E-01	2.20E-05		**1E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	2.60E+01	Y	2.49E+01	2.49E+01	2.00E+02	**1E-01**	**1E-01**	9.26E+00	-		**---**
M,P-XYLENE	108-38-3	1.20E+00	Y	1.15E+00	1.15E+00	1.00E+02	**1E-02**	**1E-02**	4.27E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.10E-01	N	2.97E-01	2.97E-01	6.00E+02	**5E-04**	**5E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	5.20E-01	Y	4.99E-01	4.99E-01	1.00E+02	**5E-03**	**5E-03**	1.85E-01	-		**---**
TETRACHLOROETHENE	127-18-4	7.40E-02	Y	7.10E-02	7.10E-02	4.00E+01	**2E-03**	**2E-03**	2.64E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	3.60E-02	N	3.45E-02	3.45E-02	2.00E+00	**2E-02**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	1.75E-02	N	1.68E-02	1.68E-02	8.00E+01	**2E-04**	**2E-04**	M	4.40E-06	M	**8E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0392H**	**Total Inhalation**	**1E+00**	**1E+00**	**4E-05**
		ND risk contribution	**1E+00**	**1E+00**	**4E-05**
		Risk for Detects only	**2E-01**	**2E-01**	**6E-06**
		Site-related only	**2E-02**	**2E-02**	**4E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0392H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0392H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0392H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.10E-01	8.49E-02	5.10E-02	1.27E-01	4.25E-02	1.0E-08		8E-10	5E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	3.60E-02	9.86E-03	5.92E-03	1.48E-02	4.93E-03	1.0E-06	kidney	1E-08	6E-09	1E-08	5E-09	**4E-08**
TRICHLOROETHENE	79-01-6	3.60E-02	2.96E-03		9.86E-03		3.1E-06	NHL+liver	9E-09		3E-08		**4E-08**
VINYL CHLORIDE	75-01-4	1.75E-02	4.79E-03	2.88E-03	7.19E-03	2.40E-03	4.4E-06		2E-08	1E-08	3E-08	1E-08	**8E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0395H**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0395H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0395H**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	6.85E-02	N	6.57E-02	6.57E-02	NA	---	---	2.44E-02	5.80E-05		**1E-06**
1,3-BUTADIENE	106-99-0	2.22E+00	N	2.12E+00	2.12E+00	2.00E+00	**1E+00**	**1E+00**	7.89E-01	3.00E-05		**2E-05**
BENZYL CHLORIDE	100-44-7	5.20E-01	N	4.99E-01	4.99E-01	1.00E+00	**5E-01**	**5E-01**	1.85E-01	4.90E-05		**9E-06**
1,4-DIOXANE	123-91-1	3.61E-01	N	3.46E-01	3.46E-01	3.00E+01	**1E-02**	**1E-02**	1.28E-01	5.00E-06		**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.15E-02	N	7.82E-02	7.82E-02	2.00E-01	**4E-01**	**4E-01**	2.90E-02	1.60E-05		**5E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	2.33E+00	N	2.23E+00	2.23E+00	2.00E+00	**1E+00**	**1E+00**	8.30E-01	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		---
1,2-DIBROMOETHANE	106-93-4	7.70E-02	N	7.38E-02	7.38E-02	9.00E+00	**8E-03**	**8E-03**	2.74E-02	6.00E-04		**2E-05**
1,2-DICHLOROETHANE	107-06-2	1.60E-01	Y	1.53E-01	1.53E-01	7.00E+00	**2E-02**	**2E-02**	5.70E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	6.95E-02	N	6.66E-02	6.66E-02	4.00E+00	**2E-02**	**2E-02**	2.48E-02	3.70E-06		**9E-08**
1,3,5-Trimethylbenzene	108-67-8	4.91E-01	N	4.71E-01	4.71E-01	6.00E+01	**8E-03**	**8E-03**	1.75E-01	-		---
1,4-DICHLOROBENZENE	106-46-7	6.13E-02	Y	5.88E-02	5.88E-02	8.00E+02	**7E-05**	**7E-05**	2.18E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	5.27E-01	Y	5.05E-01	5.05E-01	3.00E+01	**2E-02**	**2E-02**	1.88E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	6.70E-01	N	6.42E-01	6.42E-01	NA	---	---	2.39E-01	3.70E-05		**9E-06**
BROMOMETHANE	74-83-9	3.88E-01	N	3.72E-01	3.72E-01	5.00E+00	**7E-02**	**7E-02**	1.38E-01	-		---
CARBON TETRACHLORIDE	56-23-5	6.08E-01	Y	5.83E-01	5.83E-01	1.00E+02	**6E-03**	**6E-03**	2.17E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	5.31E-01	Y	5.09E-01	5.09E-01	9.77E+01	**5E-03**	**5E-03**	1.89E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.43E-01	Y	2.33E-01	2.33E-01	1.00E+03	**2E-04**	**2E-04**	8.65E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	3.37E+00	N	3.23E+00	3.23E+00	NA	---	---	1.20E+00	2.20E-05		**3E-05**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	3.52E+01	Y	3.38E+01	3.38E+01	2.00E+02	**2E-01**	**2E-01**	1.25E+01	-		---
M,P-XYLENE	108-38-3	8.65E-01	N	8.29E-01	8.29E-01	1.00E+02	**8E-03**	**8E-03**	3.08E-01	-		---
METHYLENE CHLORIDE	75-09-2	6.91E-01	Y	6.63E-01	6.63E-01	6.00E+02	**1E-03**	**1E-03**	M	1.00E-08	M	**7E-09**
NAPHTHALENE	91-20-3	1.65E+00	N	1.58E+00	1.58E+00	3.00E+00	**5E-01**	**5E-01**	5.88E-01	3.40E-05		**2E-05**
O-XYLENE	95-47-6	4.34E-01	N	4.16E-01	4.16E-01	1.00E+02	**4E-03**	**4E-03**	1.54E-01	-		---
TETRACHLOROETHENE	127-18-4	2.70E-01	Y	2.59E-01	2.59E-01	4.00E+01	**6E-03**	**6E-03**	9.62E-02	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.17E-01	Y	2.08E-01	2.08E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**5E-07**
VINYL ACETATE	108-05-4	3.52E-02	N	3.38E-02	3.38E-02	2.00E+02	**2E-04**	**2E-04**	1.25E-02	-		---
VINYL CHLORIDE	75-01-4	2.56E-02	N	2.45E-02	2.45E-02	8.00E+01	**3E-04**	**3E-04**	M	4.40E-06	M	**1E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0395H**	**Total Inhalation**	**4E+00**	**4E+00**	**1E-04**
		ND risk contribution	**4E+00**	**4E+00**	**1E-04**
		Risk for Detects only	**3E-01**	**3E-01**	**1E-05**
		Site-related only	**1E-01**	**1E-01**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0395H**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0395H**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0395H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	6.91E-01	1.89E-01	1.14E-01	2.84E-01	9.47E-02	1.0E-08		2E-09	1E-09	3E-09	9E-10	**7E-09**
TRICHLOROETHENE	79-01-6	2.17E-01	5.95E-02	3.57E-02	8.92E-02	2.97E-02	1.0E-06	kidney	6E-08	4E-08	9E-08	3E-08	**2E-07**
TRICHLOROETHENE	79-01-6	2.17E-01	1.78E-02		5.95E-02		3.1E-06	NHL+liver	6E-08		2E-07		**2E-07**
VINYL CHLORIDE	75-01-4	2.56E-02	7.00E-03	4.20E-03	1.05E-02	3.50E-03	4.4E-06		3E-08	2E-08	5E-08	2E-08	**1E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**B6-IA**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01		TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	9.16E+02	Y	8.78E+02	8.78E+02	4.00E+01	**2E+01**	**2E+01**	3.26E+02	2.60E-07	**8E-05**
TRICHLOROETHENE	79-01-6	7.13E+00	Y	6.84E+00	6.84E+00	2.00E+00	**3E+00**	**3E+00**	M	4.10E-06	M **1E-05**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**B6-IA**	**Total Inhalation**	**3E+01**	**3E+01**	**1E-04**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**3E+01**	**3E+01**	**1E-04**
		Site-related only	**3E+01**	**3E+01**	**1E-04**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**B6-IA**

Pathway:
Inhalation of Indoor Air (SUMMA)

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01		TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	8.00E-02	N	7.67E-02	7.67E-02	NA	---	---	2.85E-02	5.80E-05	**2E-06**
1,3-BUTADIENE	106-99-0	2.00E-01	Y	1.92E-01	1.92E-01	2.00E+00	**1E-01**	**1E-01**	7.12E-02	3.00E-05	**2E-06**
BENZYL CHLORIDE	100-44-7	8.50E-02	N	8.15E-02	8.15E-02	1.00E+00	**8E-02**	**8E-02**	3.03E-02	4.90E-05	**1E-06**
1,4-DIOXANE	123-91-1	3.50E-01	Y	3.36E-01	3.36E-01	3.00E+01	**1E-02**	**1E-02**	1.25E-01	5.00E-06	**6E-07**
1,1,2-TRICHLOROETHANE	79-00-5	6.00E-02	N	5.75E-02	5.75E-02	2.00E-01	**3E-01**	**3E-01**	2.14E-02	1.60E-05	**3E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	6.23E-01	6.23E-01	2.00E+00	**3E-01**	**3E-01**	2.32E-01	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	7.90E-01	Y	7.58E-01	7.58E-01	6.00E+01	**1E-02**	**1E-02**	2.81E-01	-	**---**
1,2-DIBROMOETHANE	106-93-4	2.80E-02	Y	2.68E-02	2.68E-02	9.00E+00	**3E-03**	**3E-03**	9.97E-03	6.00E-04	**6E-06**
1,2-DICHLOROETHANE	107-06-2	3.50E-01	Y	3.36E-01	3.36E-01	7.00E+00	**5E-02**	**5E-02**	1.25E-01	2.60E-05	**3E-06**
1,2-DICHLOROPROPANE	78-87-5	1.30E-01	Y	1.25E-01	1.25E-01	4.00E+00	**3E-02**	**3E-02**	4.63E-02	3.70E-06	**2E-07**
1,3,5-Trimethylbenzene	108-67-8	2.80E-01	Y	2.68E-01	2.68E-01	6.00E+01	**4E-03**	**4E-03**	9.97E-02	-	**---**
1,4-DICHLOROBENZENE	106-46-7	9.00E-02	N	8.63E-02	8.63E-02	8.00E+02	**1E-04**	**1E-04**	3.21E-02	1.10E-05	**4E-07**
BENZENE	71-43-2	1.10E+00	Y	1.05E+00	1.05E+00	3.00E+01	**4E-02**	**4E-02**	3.92E-01	7.80E-06	**3E-06**
BROMODICHLOROMETHANE	75-27-4	1.70E-01	Y	1.63E-01	1.63E-01	NA	---	---	6.05E-02	3.70E-05	**2E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	6.71E-01	6.71E-01	5.00E+00	**1E-01**	**1E-01**	2.49E-01	-	**---**
CARBON TETRACHLORIDE	56-23-5	6.00E-01	Y	5.75E-01	5.75E-01	1.00E+02	**6E-03**	**6E-03**	2.14E-01	6.00E-06	**1E-06**
CHLOROFORM	67-66-3	1.40E+00	Y	1.34E+00	1.34E+00	9.77E+01	**1E-02**	**1E-02**	4.99E-01	2.30E-05	**1E-05**
ETHYL ACETATE	141-78-6	2.60E+02	Y	2.49E+02	2.49E+02	7.00E+01	**4E+00**	**4E+00**	9.26E+01	-	**---**
ETHYLBENZENE	100-41-4	1.50E+00	Y	1.44E+00	1.44E+00	1.00E+03	**1E-03**	**1E-03**	5.34E-01	2.50E-06	**1E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	9.00E-01	N	8.63E-01	8.63E-01	NA	---	---	3.21E-01	2.20E-05	**7E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	3.90E+01	Y	3.74E+01	3.74E+01	2.00E+02	**2E-01**	**2E-01**	1.39E+01	-	**---**
M,P-XYLENE	108-38-3	8.70E+00	Y	8.34E+00	8.34E+00	1.00E+02	**8E-02**	**8E-02**	3.10E+00	-	**---**
METHYLENE CHLORIDE	75-09-2	2.90E+00	Y	2.78E+00	2.78E+00	6.00E+02	**5E-03**	**5E-03**	M	1.00E-08	M	**3E-08**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.60E+00	Y	2.49E+00	2.49E+00	1.00E+02	**2E-02**	**2E-02**	9.26E-01	-		**---**
TETRACHLOROETHENE	127-18-4	5.00E+00	Y	4.79E+00	4.79E+00	4.00E+01	**1E-01**	**1E-01**	1.78E+00	2.60E-07		**5E-07**
TRICHLOROETHENE	79-01-6	1.50E-01	Y	1.44E-01	1.44E-01	2.00E+00	**7E-02**	**7E-02**	M	4.10E-06	M	**3E-07**
VINYL ACETATE	108-05-4	3.20E+01	Y	3.07E+01	3.07E+01	2.00E+02	**2E-01**	**2E-01**	1.14E+01	-		**---**
VINYL CHLORIDE	75-01-4	6.00E-02	N	5.75E-02	5.75E-02	8.00E+01	**7E-04**	**7E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**B6-IA**	**Total Inhalation**	**5E+00**	**5E+00**	**4E-05**
		ND risk contribution	**8E-01**	**8E-01**	**1E-05**
		Risk for Detects only	**4E+00**	**4E+00**	**3E-05**
		Site-related only	**2E-01**	**2E-01**	**2E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**B6-IA**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**B6-IA**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**B6-IA**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	7.13E+00	1.95E+00	1.17E+00	2.93E+00	9.77E-01	1.0E-06	kidney	2E-06	1E-06	3E-06	1E-06	**7E-06**
TRICHLOROETHENE	79-01-6	7.13E+00	5.86E-01		1.95E+00		3.1E-06	NHL+liver	2E-06		6E-06		**8E-06**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.90E+00	7.95E-01	4.77E-01	1.19E+00	3.97E-01	1.0E-08		8E-09	5E-09	1E-08	4E-09	**3E-08**
TRICHLOROETHENE	79-01-6	1.50E-01	4.11E-02	2.47E-02	6.16E-02	2.05E-02	1.0E-06	kidney	4E-08	2E-08	6E-08	2E-08	**1E-07**
TRICHLOROETHENE	79-01-6	1.50E-01	1.23E-02		4.11E-02		3.1E-06	NHL+liver	4E-08		1E-07		**2E-07**
VINYL CHLORIDE	75-01-4	6.00E-02	1.64E-02	9.86E-03	2.47E-02	8.22E-03	4.4E-06		7E-08	4E-08	1E-07	4E-08	**3E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**B7-IA**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	4.76E+00	Y	4.56E+00	4.56E+00	4.00E+01	**1E-01**	**1E-01**	1.70E+00	2.60E-07		**4E-07**
TRICHLOROETHENE	79-01-6	2.70E-01	N	2.59E-01	2.59E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**6E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**B7-IA**	**Total Inhalation**	**2E-01**	**2E-01**	**1E-06**
		ND risk contribution	**1E-01**	**1E-01**	**6E-07**
		Risk for Detects only	**1E-01**	**1E-01**	**4E-07**
		Site-related only	**2E-01**	**2E-01**	**1E-06**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**B7-IA**

Pathway:
Inhalation of Indoor Air (SUMMA)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	8.00E-02	N	7.67E-02	7.67E-02	NA	---	---	2.85E-02	5.80E-05		**2E-06**
1,3-BUTADIENE	106-99-0	1.70E-01	Y	1.63E-01	1.63E-01	2.00E+00	**8E-02**	**8E-02**	6.05E-02	3.00E-05		**2E-06**
BENZYL CHLORIDE	100-44-7	7.00E-02	N	6.71E-02	6.71E-02	1.00E+00	**7E-02**	**7E-02**	2.49E-02	4.90E-05		**1E-06**
1,4-DIOXANE	123-91-1	1.20E+00	Y	1.15E+00	1.15E+00	3.00E+01	**4E-02**	**4E-02**	4.27E-01	5.00E-06		**2E-06**
1,1,2-TRICHLOROETHANE	79-00-5	6.00E-02	N	5.75E-02	5.75E-02	2.00E-01	**3E-01**	**3E-01**	2.14E-02	1.60E-05		**3E-07**
1,2,4-TRICHLOROBENZENE	120-82-1	6.50E-01	N	6.23E-01	6.23E-01	2.00E+00	**3E-01**	**3E-01**	2.32E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E+00	Y	1.34E+00	1.34E+00	6.00E+01	**2E-02**	**2E-02**	4.99E-01	-		**---**
1,2-DIBROMOETHANE	106-93-4	7.00E-02	N	6.71E-02	6.71E-02	9.00E+00	**7E-03**	**7E-03**	2.49E-02	6.00E-04		**1E-05**
1,2-DICHLOROETHANE	107-06-2	5.70E-01	Y	5.47E-01	5.47E-01	7.00E+00	**8E-02**	**8E-02**	2.03E-01	2.60E-05		**5E-06**
1,2-DICHLOROPROPANE	78-87-5	4.30E-01	Y	4.12E-01	4.12E-01	4.00E+00	**1E-01**	**1E-01**	1.53E-01	3.70E-06		**6E-07**
1,3,5-Trimethylbenzene	108-67-8	4.80E-01	Y	4.60E-01	4.60E-01	6.00E+01	**8E-03**	**8E-03**	1.71E-01	-		**---**
1,4-DICHLOROBENZENE	106-46-7	9.00E-02	N	8.63E-02	8.63E-02	8.00E+02	**1E-04**	**1E-04**	3.21E-02	1.10E-05		**4E-07**
BENZENE	71-43-2	2.50E+00	Y	2.40E+00	2.40E+00	3.00E+01	**8E-02**	**8E-02**	8.90E-01	7.80E-06		**7E-06**
BROMODICHLOROMETHANE	75-27-4	8.50E-02	N	8.15E-02	8.15E-02	NA	---	---	3.03E-02	3.70E-05		**1E-06**
BROMOMETHANE	74-83-9	1.95E-01	N	1.87E-01	1.87E-01	5.00E+00	**4E-02**	**4E-02**	6.95E-02	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	4.41E-01	4.41E-01	1.00E+02	**4E-03**	**4E-03**	1.64E-01	6.00E-06		**1E-06**
CHLOROFORM	67-66-3	2.30E-01	Y	2.21E-01	2.21E-01	9.77E+01	**2E-03**	**2E-03**	8.19E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	7.20E+02	Y	6.90E+02	6.90E+02	7.00E+01	**1E+01**	**1E+01**	2.56E+02	-		**---**
ETHYLBENZENE	100-41-4	1.80E+00	Y	1.73E+00	1.73E+00	1.00E+03	**2E-03**	**2E-03**	6.41E-01	2.50E-06		**2E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	9.00E-01	N	8.63E-01	8.63E-01	NA	---	---	3.21E-01	2.20E-05		**7E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	2.20E+01	Y	2.11E+01	2.11E+01	2.00E+02	**1E-01**	**1E-01**	7.84E+00	-		**---**
M,P-XYLENE	108-38-3	5.40E+00	Y	5.18E+00	5.18E+00	1.00E+02	**5E-02**	**5E-02**	1.92E+00	-		**---**
METHYLENE CHLORIDE	75-09-2	5.20E+00	Y	4.99E+00	4.99E+00	6.00E+02	**8E-03**	**8E-03**	M	1.00E-08	M	**5E-08**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	2.40E+00	Y	2.30E+00	2.30E+00	1.00E+02	**2E-02**	**2E-02**	8.55E-01	-		**---**
TETRACHLOROETHENE	127-18-4	2.30E+00	Y	2.21E+00	2.21E+00	4.00E+01	**6E-02**	**6E-02**	8.19E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	8.00E+00	Y	7.67E+00	7.67E+00	2.00E+00	**4E+00**	**4E+00**	M	4.10E-06	M	**2E-05**
VINYL ACETATE	108-05-4	7.50E+00	Y	7.19E+00	7.19E+00	2.00E+02	**4E-02**	**4E-02**	2.67E+00	-		**---**
VINYL CHLORIDE	75-01-4	6.50E-02	N	6.23E-02	6.23E-02	8.00E+01	**8E-04**	**8E-04**	M	4.40E-06	M	**3E-07**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**B7-IA**	**Total Inhalation**	**2E+01**	**2E+01**	**7E-05**
		ND risk contribution	**7E-01**	**7E-01**	**3E-05**
		Risk for Detects only	**1E+01**	**1E+01**	**4E-05**
		Site-related only	**4E+00**	**4E+00**	**2E-05**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**B7-IA**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**B7-IA**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**B7-IA**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.70E-01	7.40E-02	4.44E-02	1.11E-01	3.70E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	4E-08	**3E-07**
TRICHLOROETHENE	79-01-6	2.70E-01	2.22E-02		7.40E-02		3.1E-06	NHL+liver	7E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	5.20E+00	1.42E+00	8.55E-01	2.14E+00	7.12E-01	1.0E-08		1E-08	9E-09	2E-08	7E-09	**5E-08**
TRICHLOROETHENE	79-01-6	8.00E+00	2.19E+00	1.32E+00	3.29E+00	1.10E+00	1.0E-06	kidney	2E-06	1E-06	3E-06	1E-06	**8E-06**
TRICHLOROETHENE	79-01-6	8.00E+00	6.58E-01		2.19E+00		3.1E-06	NHL+liver	2E-06		7E-06		**9E-06**
VINYL CHLORIDE	75-01-4	6.50E-02	1.78E-02	1.07E-02	2.67E-02	8.90E-03	4.4E-06		8E-08	5E-08	1E-07	4E-08	**3E-07**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**B13-I**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA	NA	---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.40E-01	N	3.26E-01	3.26E-01	4.00E+01	**8E-03**	**8E-03**	1.21E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.70E-01	N	2.59E-01	2.59E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**6E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA	NA	---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**B13-I**	**Total Inhalation**	**1E-01**	**1E-01**	**6E-07**
		ND risk contribution	**1E-01**	**1E-01**	**6E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**1E-01**	**1E-01**	**6E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**B13-I**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**B13-I**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**B13-I**

Pathway:
Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**B13-I**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**B13-I**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.70E-01	7.40E-02	4.44E-02	1.11E-01	3.70E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	4E-08	**3E-07**
TRICHLOROETHENE	79-01-6	2.70E-01	2.22E-02		7.40E-02		3.1E-06	NHL+liver	7E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**B20-I**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.40E-01	N	3.26E-01	3.26E-01	4.00E+01	**8E-03**	**8E-03**	1.21E-01	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	2.70E-01	N	2.59E-01	2.59E-01	2.00E+00	**1E-01**	**1E-01**	M	4.10E-06	M	**6E-07**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**B20-I**	**Total Inhalation**	**1E-01**	**1E-01**	**6E-07**
		ND risk contribution	**1E-01**	**1E-01**	**6E-07**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**1E-01**	**1E-01**	**6E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**B20-I**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.10E-02	N	1.05E-02	1.05E-02	NA	---	---	3.92E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	8.40E-01	Y	8.05E-01	8.05E-01	2.00E+00	**4E-01**	**4E-01**	2.99E-01	3.00E-05		**9E-06**
BENZYL CHLORIDE	100-44-7	9.00E-02	N	8.63E-02	8.63E-02	1.00E+00	**9E-02**	**9E-02**	3.21E-02	4.90E-05		**2E-06**
1,4-DIOXANE	123-91-1	7.50E-02	N	7.19E-02	7.19E-02	3.00E+01	**2E-03**	**2E-03**	2.67E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	7.00E-03	N	6.71E-03	6.71E-03	2.00E-01	**3E-02**	**3E-02**	2.49E-03	1.60E-05		**4E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.00E-01	N	4.79E-01	4.79E-01	2.00E+00	**2E-01**	**2E-01**	1.78E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.20E-01	Y	1.15E-01	1.15E-01	6.00E+01	**2E-03**	**2E-03**	4.27E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.40E-02	N	3.26E-02	3.26E-02	9.00E+00	**4E-03**	**4E-03**	1.21E-02	6.00E-04		**7E-06**
1,2-DICHLOROETHANE	107-06-2	1.00E-01	Y	9.59E-02	9.59E-02	7.00E+00	**1E-02**	**1E-02**	3.56E-02	2.60E-05		**9E-07**
1,2-DICHLOROPROPANE	78-87-5	9.50E-02	N	9.11E-02	9.11E-02	4.00E+00	**2E-02**	**2E-02**	3.38E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	6.00E-02	N	5.75E-02	5.75E-02	6.00E+01	**1E-03**	**1E-03**	2.14E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	3.10E-01	Y	2.97E-01	2.97E-01	8.00E+02	**4E-04**	**4E-04**	1.10E-01	1.10E-05		**1E-06**
BENZENE	71-43-2	5.20E-01	Y	4.99E-01	4.99E-01	3.00E+01	**2E-02**	**2E-02**	1.85E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.30E-01	N	1.25E-01	1.25E-01	NA	---	---	4.63E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	7.00E-01	N	6.71E-01	6.71E-01	5.00E+00	**1E-01**	**1E-01**	2.49E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	3.93E-01	3.93E-01	1.00E+02	**4E-03**	**4E-03**	1.46E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	3.30E-01	Y	3.16E-01	3.16E-01	9.77E+01	**3E-03**	**3E-03**	1.18E-01	2.30E-05		**3E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.40E-01	Y	1.34E-01	1.34E-01	1.00E+03	**1E-04**	**1E-04**	4.99E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	6.50E-01	N	6.23E-01	6.23E-01	NA	---	---	2.32E-01	2.20E-05		**5E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	1.60E+01	Y	1.53E+01	1.53E+01	2.00E+02	**8E-02**	**8E-02**	5.70E+00	-		**---**
M,P-XYLENE	108-38-3	4.00E-01	Y	3.84E-01	3.84E-01	1.00E+02	**4E-03**	**4E-03**	1.42E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	2.95E-01	N	2.83E-01	2.83E-01	6.00E+02	**5E-04**	**5E-04**	M	1.00E-08	M	**3E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.40E-01	Y	1.34E-01	1.34E-01	1.00E+02	**1E-03**	**1E-03**	4.99E-02	-		**---**
TETRACHLOROETHENE	127-18-4	1.40E-01	Y	1.34E-01	1.34E-01	4.00E+01	**3E-03**	**3E-03**	4.99E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	1.70E-02	N	1.63E-02	1.63E-02	2.00E+00	**8E-03**	**8E-03**	M	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	8.50E-03	N	8.15E-03	8.15E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**4E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**B20-I**	**Total Inhalation**	**1E+00**	**1E+00**	**3E-05**
		ND risk contribution	**5E-01**	**5E-01**	**2E-05**
		Risk for Detects only	**5E-01**	**5E-01**	**2E-05**
		Site-related only	**1E-02**	**1E-02**	**2E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**B20-I**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**B20-I**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**B20-I**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.70E-01	7.40E-02	4.44E-02	1.11E-01	3.70E-02	1.0E-06	kidney	7E-08	4E-08	1E-07	4E-08	**3E-07**
TRICHLOROETHENE	79-01-6	2.70E-01	2.22E-02		7.40E-02		3.1E-06	NHL+liver	7E-08		2E-07		**3E-07**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	2.95E-01	8.08E-02	4.85E-02	1.21E-01	4.04E-02	1.0E-08		8E-10	5E-10	1E-09	4E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.70E-02	4.66E-03	2.79E-03	6.99E-03	2.33E-03	1.0E-06	kidney	5E-09	3E-09	7E-09	2E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.70E-02	1.40E-03		4.66E-03		3.1E-06	NHL+liver	4E-09		1E-08		**2E-08**
VINYL CHLORIDE	75-01-4	8.50E-03	2.33E-03	1.40E-03	3.49E-03	1.16E-03	4.4E-06		1E-08	6E-09	2E-08	5E-09	**4E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**B32**

Pathway:
Inhalation of Indoor Air (HAPSITE)

				RME child	RME adult				RME lifetime			
			TWFnc (unitless)	9.59E-01	9.59E-01			TWFc (unitless)	3.56E-01			
COPC	**CASRN**	**EPCmax Indoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR $(ug/m^3)^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not analyzed by HAPSITE		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not analyzed by HAPSITE		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not analyzed by HAPSITE		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not analyzed by HAPSITE		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not analyzed by HAPSITE		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not analyzed by HAPSITE		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not analyzed by HAPSITE		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not analyzed by HAPSITE		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	Not analyzed by HAPSITE		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not analyzed by HAPSITE		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not analyzed by HAPSITE		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	Not analyzed by HAPSITE		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	Not analyzed by HAPSITE		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	Not analyzed by HAPSITE		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not analyzed by HAPSITE		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not analyzed by HAPSITE		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not analyzed by HAPSITE		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not analyzed by HAPSITE		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	Not analyzed by HAPSITE		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**B32**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		ND risk contribution	**0E+00**	**0E+00**	**0E+00**
		Risk for Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**B32**

Pathway:
Inhalation of Indoor Air (SUMMA)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.20E-02	N	1.15E-02	1.15E-02	NA	---	---	4.27E-03	5.80E-05		**2E-07**
1,3-BUTADIENE	106-99-0	5.50E-02	N	5.27E-02	5.27E-02	2.00E+00	**3E-02**	**3E-02**	1.96E-02	3.00E-05		**6E-07**
BENZYL CHLORIDE	100-44-7	1.00E-01	N	9.59E-02	9.59E-02	1.00E+00	**1E-01**	**1E-01**	3.56E-02	4.90E-05		**2E-06**
1,4-DIOXANE	123-91-1	8.00E-02	N	7.67E-02	7.67E-02	3.00E+01	**3E-03**	**3E-03**	2.85E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	8.00E-03	N	7.67E-03	7.67E-03	2.00E-01	**4E-02**	**4E-02**	2.85E-03	1.60E-05		**5E-08**
1,2,4-TRICHLOROBENZENE	120-82-1	5.50E-01	N	5.27E-01	5.27E-01	2.00E+00	**3E-01**	**3E-01**	1.96E-01	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	1.40E-01	Y	1.34E-01	1.34E-01	6.00E+01	**2E-03**	**2E-03**	4.99E-02	-		**---**
1,2-DIBROMOETHANE	106-93-4	3.80E-02	N	3.64E-02	3.64E-02	9.00E+00	**4E-03**	**4E-03**	1.35E-02	6.00E-04		**8E-06**
1,2-DICHLOROETHANE	107-06-2	3.30E-01	Y	3.16E-01	3.16E-01	7.00E+00	**5E-02**	**5E-02**	1.18E-01	2.60E-05		**3E-06**
1,2-DICHLOROPROPANE	78-87-5	1.05E-01	N	1.01E-01	1.01E-01	4.00E+00	**3E-02**	**3E-02**	3.74E-02	3.70E-06		**1E-07**
1,3,5-Trimethylbenzene	108-67-8	7.00E-02	N	6.71E-02	6.71E-02	6.00E+01	**1E-03**	**1E-03**	2.49E-02	-		**---**
1,4-DICHLOROBENZENE	106-46-7	6.00E-02	N	5.75E-02	5.75E-02	8.00E+02	**7E-05**	**7E-05**	2.14E-02	1.10E-05		**2E-07**
BENZENE	71-43-2	4.00E-01	Y	3.84E-01	3.84E-01	3.00E+01	**1E-02**	**1E-02**	1.42E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	1.45E-01	N	1.39E-01	1.39E-01	NA	---	---	5.16E-02	3.70E-05		**2E-06**
BROMOMETHANE	74-83-9	7.50E-01	N	7.19E-01	7.19E-01	5.00E+00	**1E-01**	**1E-01**	2.67E-01	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	3.84E-01	3.84E-01	1.00E+02	**4E-03**	**4E-03**	1.42E-01	6.00E-06		**9E-07**
CHLOROFORM	67-66-3	4.80E-01	Y	4.60E-01	4.60E-01	9.77E+01	**5E-03**	**5E-03**	1.71E-01	2.30E-05		**4E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		**---**
ETHYLBENZENE	100-41-4	1.20E-01	Y	1.15E-01	1.15E-01	1.00E+03	**1E-04**	**1E-04**	4.27E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	7.50E-01	N	7.19E-01	7.19E-01	NA	---	---	2.67E-01	2.20E-05		**6E-06**
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	5.30E+01	Y	5.08E+01	5.08E+01	2.00E+02	**3E-01**	**3E-01**	1.89E+01	-		**---**
M,P-XYLENE	108-38-3	3.90E-01	Y	3.74E-01	3.74E-01	1.00E+02	**4E-03**	**4E-03**	1.39E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	3.60E-01	N	3.45E-01	3.45E-01	6.00E+02	**6E-04**	**6E-04**	M	1.00E-08	M	**4E-09**
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		**---**
O-XYLENE	95-47-6	1.60E-01	Y	1.53E-01	1.53E-01	1.00E+02	**2E-03**	**2E-03**	5.70E-02	-		**---**
TETRACHLOROETHENE	127-18-4	4.80E-02	Y	4.60E-02	4.60E-02	4.00E+01	**1E-03**	**1E-03**	1.71E-02	2.60E-07		**4E-09**
TRICHLOROETHENE	79-01-6	1.90E-02	N	1.82E-02	1.82E-02	2.00E+00	**9E-03**	**9E-03**	M	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		**---**
VINYL CHLORIDE	75-01-4	9.50E-03	N	9.11E-03	9.11E-03	8.00E+01	**1E-04**	**1E-04**	M	4.40E-06	M	**4E-08**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**B32**	**Total Inhalation**	**9E-01**	**9E-01**	**3E-05**
		ND risk contribution	**6E-01**	**6E-01**	**2E-05**
		Risk for Detects only	**3E-01**	**3E-01**	**9E-06**
		Site-related only	**1E-02**	**1E-02**	**2E-07**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE PCE PLUME SUPERFUND, BY METHOD

Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**B32**

Pathway:

Inhalation of Indoor Air (Passive)

	RME child	RME adult		RME lifetime
TWFnc (unitless)	9.59E-01	9.59E-01	TWFc (unitless)	3.56E-01

COPC	CASRN	EPCmax Indoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR $(ug/m^3)^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	NA		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	NA		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	NA		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	NA		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	NA		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	NA		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	NA		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	NA		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	NA		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	NA		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	NA		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	NA		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL (MANUFACT	67-63-0	NA		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	NA		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	NA		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	NA		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	NA		---	---	4.00E+01	---	---	---	2.60E-07		---
TRICHLOROETHENE	79-01-6	NA		---	---	2.00E+00	---	---	M	4.10E-06	M	**0E+00**
VINYL ACETATE	108-05-4	NA		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	NA		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**B32**	**Total Inhalation**	**0E+00**	**0E+00**	**0E+00**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**0E+00**	**0E+00**	**0E+00**
		Site-related only	**0E+00**	**0E+00**	**0E+00**

ATTACHMENT H.7. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR INDOOR AIR AT THE VA PCE PLUME SUPERFUND, BY METHOD - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**B32**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Indoor Air (HAPSITE)

	RME child	RME adult
TWFc (unitless)	8.22E-02	2.74E-01

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not analyzed by	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Pathway:
Inhalation of Indoor Air (SUMMA)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	3.60E-01	9.86E-02	5.92E-02	1.48E-01	4.93E-02	1.0E-08		1E-09	6E-10	1E-09	5E-10	**4E-09**
TRICHLOROETHENE	79-01-6	1.90E-02	5.21E-03	3.12E-03	7.81E-03	2.60E-03	1.0E-06	kidney	5E-09	3E-09	8E-09	3E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.90E-02	1.56E-03		5.21E-03		3.1E-06	NHL+liver	5E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	9.50E-03	2.60E-03	1.56E-03	3.90E-03	1.30E-03	4.4E-06		1E-08	7E-09	2E-08	6E-09	**4E-08**

Pathway:
Inhalation of Indoor Air (Passive)

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	NA	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---	---	---	---	1.0E-06	kidney	---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	NA	---		---		3.1E-06	NHL+liver	---		---		**---**
VINYL CHLORIDE	75-01-4	NA	---	---	---	---	4.4E-06		---	---	---	---	**---**

Attachment H.8

Detailed Human Health Risk Calculations for Outdoor Air

CDM Smith

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0001H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07		**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0001H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0001H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0002H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07		**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0002H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0002H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0003H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult		CTE lifetime
	TWFnc (unitless)	6.17E-03	#N/A	TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.05E-01	N	1.26E-03	---	2.00E+00	**6E-04**	**---**	1.08E-04	3.00E-05		**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.35E-01	N	2.07E-03	---	3.00E+01	**7E-05**	**---**	1.77E-04	5.00E-06		**9E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	8.70E-02	Y	5.37E-04	---	7.00E+00	**8E-05**	**---**	4.60E-05	2.60E-05		**1E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	1.80E+00	Y	1.11E-02	---	3.00E+01	**4E-04**	**---**	9.51E-04	7.80E-06		**7E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	2.34E-03	---	1.00E+02	**2E-05**	**---**	2.01E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	1.60E-01	Y	9.87E-04	---	9.77E+01	**1E-05**	**---**	8.46E-05	2.30E-05		**2E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	4.30E-01	Y	2.65E-03	---	1.00E+03	**3E-06**	**---**	2.27E-04	2.50E-06		**6E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.70E+00	Y	1.05E-02	---	1.00E+02	**1E-04**	**---**	8.99E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.10E-01	Y	6.78E-04	---	4.00E+01	**2E-05**	**---**	5.81E-05	2.60E-07		**2E-11**
TRICHLOROETHENE	79-01-6	2.90E-02	Y	1.79E-04	---	2.00E+00	**9E-05**	**---**	1.53E-05	4.10E-06	M	**1E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0003H**	**Total Inhalation**	**1E-03**	**0E+00**	**2E-08**
		Based on NDs only	**7E-04**	**0E+00**	**4E-09**
		Based on Detects only	**7E-04**	**All ND**	**1E-08**
		Site-related only	**2E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0003H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.90E-02	5.11E-05	3.07E-05	---	---	1.0E-06	kidney	5E-11	3E-11	---	---	**8E-11**
TRICHLOROETHENE	79-01-6	2.90E-02	1.53E-05		---		3.1E-06	NHL+liver	5E-11		---		**5E-11**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0004H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	6.17E-03	#N/A			TWFc (unitless)	5.29E-04			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07		**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0004H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0004H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0011H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult		CTE lifetime
TWFnc (unitless)		6.17E-03	#N/A	TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.40E-01	Y	8.63E-04	---	2.00E+00	**4E-04**	**---**	7.40E-05	3.00E-05		**2E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	1.80E-01	Y	1.11E-03	---	3.00E+01	**4E-05**	**---**	9.51E-05	5.00E-06		**5E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	8.63E-04	---	7.00E+00	**1E-04**	**---**	7.40E-05	2.60E-05		**2E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	1.10E+00	Y	6.78E-03	---	3.00E+01	**2E-04**	**---**	5.81E-04	7.80E-06		**5E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	2.59E-03	---	1.00E+02	**3E-05**	**---**	2.22E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	1.00E+00	Y	6.17E-03	---	9.77E+01	**6E-05**	**---**	5.29E-04	2.30E-05		**1E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	9.80E-01	Y	6.04E-03	---	1.00E+03	**6E-06**	**---**	5.18E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.80E+00	Y	1.11E-02	---	1.00E+02	**1E-04**	**---**	9.51E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	5.80E-01	Y	3.58E-03	---	4.00E+01	**9E-05**	**---**	3.07E-04	2.60E-07		**8E-11**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	1.79E-03	---	2.00E+00	**9E-04**	**---**	1.53E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0011H**	**Total Inhalation**	**2E-03**	**0E+00**	**3E-08**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**2E-03**	**All ND**	**3E-08**
		Site-related only	**1E-03**	**0E+00**	**2E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0011H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.90E-01	5.11E-04	3.07E-04	---	---	1.0E-06	kidney	5E-10	3E-10	---	---	**8E-10**
TRICHLOROETHENE	79-01-6	2.90E-01	1.53E-04		---		3.1E-06	NHL+liver	5E-10		---		**5E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0012H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07	**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M **1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0012H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0012H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0013H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07		**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0013H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0013H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0025H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07	**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M **1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0025H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0025H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0026H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult		CTE lifetime
TWFnc (unitless)		6.17E-03	#N/A	TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	5.53E-01	N	3.41E-03	---	2.00E+00	**2E-03**	**---**	2.92E-04	3.00E-05		**9E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	1.40E-01	Y	8.63E-04	---	3.00E+01	**3E-05**	**---**	7.40E-05	5.00E-06		**4E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	6.00E-02	Y	3.70E-04	---	7.00E+00	**5E-05**	**---**	3.17E-05	2.60E-05		**8E-10**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.30E-01	Y	3.27E-03	---	3.00E+01	**1E-04**	**---**	2.80E-04	7.80E-06		**2E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	2.59E-03	---	1.00E+02	**3E-05**	**---**	2.22E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	1.10E-01	Y	6.78E-04	---	9.77E+01	**7E-06**	**---**	5.81E-05	2.30E-05		**1E-09**
ETHYL ACETATE	141-78-6	1.80E+00	N	1.11E-02	---	7.00E+01	**2E-04**	**---**	9.52E-04	-		**---**
ETHYLBENZENE	100-41-4	7.80E-02	Y	4.81E-04	---	1.00E+03	**5E-07**	**---**	4.12E-05	2.50E-06		**1E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	7.00E-01	Y	4.32E-03	---	1.00E+02	**4E-05**	**---**	3.70E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.00E-01	Y	6.17E-04	---	4.00E+01	**2E-05**	**---**	5.29E-05	2.60E-07		**1E-11**
TRICHLOROETHENE	79-01-6	1.35E+00	N	8.33E-03	---	2.00E+00	**4E-03**	**---**	7.14E-04	4.10E-06	M	**6E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0026H**	**Total Inhalation**	**6E-03**	**0E+00**	**2E-08**
		Based on NDs only	**6E-03**	**0E+00**	**1E-08**
		Based on Detects only	**3E-04**	**All ND**	**6E-09**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0026H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.35E+00	2.38E-03	1.43E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**4E-09**
TRICHLOROETHENE	79-01-6	1.35E+00	7.14E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0027H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07	**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M **1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0027H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0027H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0029H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07	**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M **1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0029H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0029H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0030H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	5.53E-01	N	3.41E-03	---	2.00E+00	**2E-03**	**---**	2.92E-04	3.00E-05		**9E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	**---**	**---**	---	5.00E-06		**---**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.01E+00	N	6.24E-03	---	7.00E+00	**9E-04**	**---**	5.35E-04	2.60E-05		**1E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	6.71E-01	Y	4.13E-03	---	3.00E+01	**1E-04**	**---**	3.54E-04	7.80E-06		**3E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	1.57E+00	N	9.69E-03	---	1.00E+02	**1E-04**	**---**	8.31E-04	6.00E-06		**5E-09**
CHLOROFORM	67-66-3	1.22E+00	N	7.52E-03	---	9.77E+01	**8E-05**	**---**	6.45E-04	2.30E-05		**1E-08**
ETHYL ACETATE	141-78-6	1.80E+00	N	1.11E-02	---	7.00E+01	**2E-04**	**---**	9.52E-04	-		**---**
ETHYLBENZENE	100-41-4	1.10E+00	N	6.78E-03	---	1.00E+03	**7E-06**	**---**	5.81E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.00E+00	Y	6.17E-03	---	1.00E+02	**6E-05**	**---**	5.29E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.70E+00	N	1.05E-02	---	4.00E+01	**3E-04**	**---**	8.99E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	1.35E+00	N	8.33E-03	---	2.00E+00	**4E-03**	**---**	7.14E-04	4.10E-06	M	**6E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0030H**	**Total Inhalation**	**8E-03**	**0E+00**	**5E-08**
		Based on NDs only	**7E-03**	**0E+00**	**5E-08**
		Based on Detects only	**2E-04**	**All ND**	**3E-09**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0030H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.35E+00	2.38E-03	1.43E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**4E-09**
TRICHLOROETHENE	79-01-6	1.35E+00	7.14E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0037H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	1.40E-01	Y	8.63E-04	---	2.00E+00	**4E-04**	**---**	7.40E-05	3.00E-05	**2E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	3.70E-01	N	2.28E-03	---	3.00E+01	**8E-05**	**---**	1.96E-04	5.00E-06	**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	6.78E-04	---	7.00E+00	**1E-04**	**---**	5.81E-05	2.60E-05	**2E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	9.60E-01	Y	5.92E-03	---	3.00E+01	**2E-04**	**---**	5.07E-04	7.80E-06	**4E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	2.59E-03	---	1.00E+02	**3E-05**	**---**	2.22E-04	6.00E-06	**1E-09**
CHLOROFORM	67-66-3	2.70E-01	Y	1.67E-03	---	9.77E+01	**2E-05**	**---**	1.43E-04	2.30E-05	**3E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	9.30E-01	Y	5.74E-03	---	1.00E+03	**6E-06**	**---**	4.92E-04	2.50E-06	**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	1.80E+00	Y	1.11E-02	---	1.00E+02	**1E-04**	**---**	9.51E-04	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	5.30E-01	Y	3.27E-03	---	4.00E+01	**8E-05**	**---**	2.80E-04	2.60E-07	**7E-11**
TRICHLOROETHENE	79-01-6	1.50E-01	Y	9.25E-04	---	2.00E+00	**5E-04**	**---**	7.93E-05	4.10E-06	M **7E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0037H**	**Total Inhalation**	**2E-03**	**0E+00**	**2E-08**
		Based on NDs only	**8E-05**	**0E+00**	**1E-09**
		Based on Detects only	**1E-03**	**All ND**	**1E-08**
		Site-related only	**6E-04**	**0E+00**	**2E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0037H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.50E-01	2.64E-04	1.59E-04	---	---	1.0E-06	kidney	3E-10	2E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	1.50E-01	7.93E-05		---		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0040H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07	**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M **1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0040H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0040H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0041H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07	**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M **1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0041H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0041H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0045S**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime	
	TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04	

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07		**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0045S**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0045S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0047H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07	**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M **1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0047H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0047H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0050H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07		**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0050H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0050H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0051H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult		CTE lifetime
TWFnc (unitless)		6.17E-03	#N/A	TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.00E-01	N	1.23E-03	---	2.00E+00	**6E-04**	**---**	1.06E-04	3.00E-05		**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	4.20E-01	Y	2.59E-03	---	3.00E+01	**9E-05**	**---**	2.22E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	6.30E-02	Y	3.89E-04	---	7.00E+00	**6E-05**	**---**	3.33E-05	2.60E-05		**9E-10**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.30E-01	Y	3.27E-03	---	3.00E+01	**1E-04**	**---**	2.80E-04	7.80E-06		**2E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	2.84E-03	---	1.00E+02	**3E-05**	**---**	2.43E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	1.60E-01	Y	9.87E-04	---	9.77E+01	**1E-05**	**---**	8.46E-05	2.30E-05		**2E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.30E-01	Y	8.02E-04	---	1.00E+03	**8E-07**	**---**	6.87E-05	2.50E-06		**2E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	5.50E-01	Y	3.39E-03	---	1.00E+02	**3E-05**	**---**	2.91E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	2.00E-01	Y	1.23E-03	---	4.00E+01	**3E-05**	**---**	1.06E-04	2.60E-07		**3E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	**---**	1.32E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0051H**	**Total Inhalation**	**2E-03**	**0E+00**	**1E-08**
		Based on NDs only	**1E-03**	**0E+00**	**4E-09**
		Based on Detects only	**4E-04**	**All ND**	**8E-09**
		Site-related only	**9E-04**	**0E+00**	**2E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0051H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0052H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07		**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0052H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0052H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0053H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07		**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0053H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0053H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0054H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07	**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M **1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0054H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0054H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0055H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07		**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0055H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0055H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0056H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07	**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M **1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0056H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0056H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0058H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07	**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M **1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0058H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0058H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0059H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult		CTE lifetime
TWFnc (unitless)		6.17E-03	#N/A	TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.20E-01	N	1.36E-03	---	2.00E+00	**7E-04**	**---**	1.16E-04	3.00E-05		**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.60E-01	N	2.22E-03	---	3.00E+01	**7E-05**	**---**	1.90E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	9.20E-02	Y	5.67E-04	---	7.00E+00	**8E-05**	**---**	4.86E-05	2.60E-05		**1E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	8.30E-01	Y	5.12E-03	---	3.00E+01	**2E-04**	**---**	4.39E-04	7.80E-06		**3E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	2.59E-03	---	1.00E+02	**3E-05**	**---**	2.22E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	1.00E-01	N	6.17E-04	---	9.77E+01	**6E-06**	**---**	5.29E-05	2.30E-05		**1E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	5.40E-01	Y	3.33E-03	---	1.00E+03	**3E-06**	**---**	2.85E-04	2.50E-06		**7E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.10E+00	Y	6.78E-03	---	1.00E+02	**7E-05**	**---**	5.81E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	3.50E-01	Y	2.16E-03	---	4.00E+01	**5E-05**	**---**	1.85E-04	2.60E-07		**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	**---**	1.32E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0059H**	**Total Inhalation**	**2E-03**	**0E+00**	**1E-08**
		Based on NDs only	**2E-03**	**0E+00**	**7E-09**
		Based on Detects only	**4E-04**	**All ND**	**7E-09**
		Site-related only	**9E-04**	**0E+00**	**2E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0059H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0060H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07	**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M **1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0060H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0060H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0061H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime	
	TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04	

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07		**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0061H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0061H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0062H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime	
	TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04	

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07		**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M	**1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0062H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0062H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0063H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	2.16E-03	---	4.00E+01	**5E-05**	---	1.85E-04	2.60E-07	**5E-11**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.54E-03	---	2.00E+00	**8E-04**	---	1.32E-04	4.10E-06	M **1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0063H**	**Total Inhalation**	**8E-04**	**0E+00**	**1E-09**
		Based on NDs only	**8E-04**	**0E+00**	**1E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**8E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0063H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	4.40E-04	2.64E-04	---	---	1.0E-06	kidney	4E-10	3E-10	---	---	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	1.32E-04		---		3.1E-06	NHL+liver	4E-10		---		**4E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0064H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.70E-01	N	1.05E-03	---	2.00E+00	**5E-04**	**---**	8.99E-05	3.00E-05		**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	2.80E-01	N	1.73E-03	---	3.00E+01	**6E-05**	**---**	1.48E-04	5.00E-06		**7E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	9.90E-02	Y	6.11E-04	---	7.00E+00	**9E-05**	**---**	5.23E-05	2.60E-05		**1E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	4.60E-01	Y	2.84E-03	---	3.00E+01	**9E-05**	**---**	2.43E-04	7.80E-06		**2E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	2.47E-03	---	1.00E+02	**2E-05**	**---**	2.11E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	8.90E-02	Y	5.49E-04	---	9.77E+01	**6E-06**	**---**	4.70E-05	2.30E-05		**1E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	7.40E-01	Y	4.56E-03	---	1.00E+03	**5E-06**	**---**	3.91E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	3.10E+00	Y	1.91E-02	---	1.00E+02	**2E-04**	**---**	1.64E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	5.10E-01	Y	3.15E-03	---	4.00E+01	**8E-05**	**---**	2.70E-04	2.60E-07		**7E-11**
TRICHLOROETHENE	79-01-6	3.40E-02	Y	2.10E-04	---	2.00E+00	**1E-04**	**---**	1.80E-05	4.10E-06	M	**2E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0064H**	**Total Inhalation**	**1E-03**	**0E+00**	**1E-08**
		Based on NDs only	**6E-04**	**0E+00**	**3E-09**
		Based on Detects only	**6E-04**	**All ND**	**7E-09**
		Site-related only	**2E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0064H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	3.40E-02	5.99E-05	3.59E-05	---	---	1.0E-06	kidney	6E-11	4E-11	---	---	**1E-10**
TRICHLOROETHENE	79-01-6	3.40E-02	1.80E-05		---		3.1E-06	NHL+liver	6E-11		---		**6E-11**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0065H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult		CTE lifetime
TWFnc (unitless)		6.17E-03	#N/A	TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.15E-01	N	1.33E-03	---	2.00E+00	**7E-04**	**---**	1.14E-04	3.00E-05		**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.55E-01	N	2.19E-03	---	3.00E+01	**7E-05**	**---**	1.88E-04	5.00E-06		**9E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	7.00E-02	Y	4.32E-04	---	7.00E+00	**6E-05**	**---**	3.70E-05	2.60E-05		**1E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	7.60E-01	Y	4.69E-03	---	3.00E+01	**2E-04**	**---**	4.02E-04	7.80E-06		**3E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	2.53E-03	---	1.00E+02	**3E-05**	**---**	2.17E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	9.50E-02	N	5.86E-04	---	9.77E+01	**6E-06**	**---**	5.02E-05	2.30E-05		**1E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.70E-01	Y	1.67E-03	---	1.00E+03	**2E-06**	**---**	1.43E-04	2.50E-06		**4E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.00E+00	Y	6.17E-03	---	1.00E+02	**6E-05**	**---**	5.29E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	8.30E-02	Y	5.12E-04	---	4.00E+01	**1E-05**	**---**	4.39E-05	2.60E-07		**1E-11**
TRICHLOROETHENE	79-01-6	1.05E-01	N	6.48E-04	---	2.00E+00	**3E-04**	**---**	5.55E-05	4.10E-06	M	**5E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0065H**	**Total Inhalation**	**1E-03**	**0E+00**	**1E-08**
		Based on NDs only	**1E-03**	**0E+00**	**6E-09**
		Based on Detects only	**3E-04**	**All ND**	**6E-09**
		Site-related only	**4E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0065H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.05E-01	1.85E-04	1.11E-04	---	---	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	1.05E-01	5.55E-05		---		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0066H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult		CTE lifetime
TWFnc (unitless)		6.17E-03	#N/A	TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.95E-01	N	1.20E-03	---	2.00E+00	**6E-04**	**---**	1.03E-04	3.00E-05		**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.15E-01	N	1.94E-03	---	3.00E+01	**6E-05**	**---**	1.67E-04	5.00E-06		**8E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.30E-01	Y	8.02E-04	---	7.00E+00	**1E-04**	**---**	6.87E-05	2.60E-05		**2E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	6.80E-01	Y	4.19E-03	---	3.00E+01	**1E-04**	**---**	3.59E-04	7.80E-06		**3E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	2.65E-03	---	1.00E+02	**3E-05**	**---**	2.27E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	1.10E-01	Y	6.78E-04	---	9.77E+01	**7E-06**	**---**	5.81E-05	2.30E-05		**1E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	3.40E+00	Y	2.10E-02	---	1.00E+03	**2E-05**	**---**	1.80E-03	2.50E-06		**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	8.00E+00	Y	4.93E-02	---	1.00E+02	**5E-04**	**---**	4.23E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	9.90E-02	Y	6.11E-04	---	4.00E+01	**2E-05**	**---**	5.23E-05	2.60E-07		**1E-11**
TRICHLOROETHENE	79-01-6	9.50E-02	N	5.86E-04	---	2.00E+00	**3E-04**	**---**	5.02E-05	4.10E-06	M	**4E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0066H**	**Total Inhalation**	**2E-03**	**0E+00**	**2E-08**
		Based on NDs only	**1E-03**	**0E+00**	**4E-09**
		Based on Detects only	**8E-04**	**All ND**	**1E-08**
		Site-related only	**4E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0066H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	9.50E-02	1.67E-04	1.00E-04	---	---	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	9.50E-02	5.02E-05		---		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0071H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult		CTE lifetime
TWFnc (unitless)		6.17E-03	#N/A	TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.30E-01	N	1.42E-03	---	2.00E+00	**7E-04**	**---**	1.22E-04	3.00E-05		**4E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.70E-01	N	2.28E-03	---	3.00E+01	**8E-05**	**---**	1.96E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	5.60E-02	Y	3.45E-04	---	7.00E+00	**5E-05**	**---**	2.96E-05	2.60E-05		**8E-10**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.00E-01	Y	3.08E-03	---	3.00E+01	**1E-04**	**---**	2.64E-04	7.80E-06		**2E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	2.65E-03	---	1.00E+02	**3E-05**	**---**	2.27E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	1.10E-01	Y	6.78E-04	---	9.77E+01	**7E-06**	**---**	5.81E-05	2.30E-05		**1E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.10E-01	Y	6.78E-04	---	1.00E+03	**7E-07**	**---**	5.81E-05	2.50E-06		**1E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	3.90E-01	Y	2.41E-03	---	1.00E+02	**2E-05**	**---**	2.06E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.70E-01	Y	1.05E-03	---	4.00E+01	**3E-05**	**---**	8.99E-05	2.60E-07		**2E-11**
TRICHLOROETHENE	79-01-6	1.10E-01	N	6.78E-04	---	2.00E+00	**3E-04**	**---**	5.81E-05	4.10E-06	M	**5E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0071H**	**Total Inhalation**	**1E-03**	**0E+00**	**1E-08**
		Based on NDs only	**1E-03**	**0E+00**	**5E-09**
		Based on Detects only	**2E-04**	**All ND**	**6E-09**
		Site-related only	**4E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0071H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.10E-01	1.94E-04	1.16E-04	---	---	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	1.10E-01	5.81E-05		---		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0076H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult		CTE lifetime
TWFnc (unitless)		6.17E-03	#N/A	TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.00E-01	N	1.23E-03	---	2.00E+00	**6E-04**	**---**	1.06E-04	3.00E-05		**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.30E-01	N	2.04E-03	---	3.00E+01	**7E-05**	**---**	1.74E-04	5.00E-06		**9E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	6.70E-02	Y	4.13E-04	---	7.00E+00	**6E-05**	**---**	3.54E-05	2.60E-05		**9E-10**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.30E-01	Y	3.27E-03	---	3.00E+01	**1E-04**	**---**	2.80E-04	7.80E-06		**2E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	2.90E-03	---	1.00E+02	**3E-05**	**---**	2.48E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	8.20E-02	Y	5.06E-04	---	9.77E+01	**5E-06**	**---**	4.33E-05	2.30E-05		**1E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	8.30E-02	Y	5.12E-04	---	1.00E+03	**5E-07**	**---**	4.39E-05	2.50E-06		**1E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	3.00E-01	Y	1.85E-03	---	1.00E+02	**2E-05**	**---**	1.59E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.25E-01	N	7.71E-04	---	4.00E+01	**2E-05**	**---**	6.61E-05	2.60E-07		**2E-11**
TRICHLOROETHENE	79-01-6	1.00E-01	N	6.17E-04	---	2.00E+00	**3E-04**	**---**	5.29E-05	4.10E-06	M	**4E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0076H**	**Total Inhalation**	**1E-03**	**0E+00**	**1E-08**
		Based on NDs only	**1E-03**	**0E+00**	**5E-09**
		Based on Detects only	**2E-04**	**All ND**	**6E-09**
		Site-related only	**4E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0076H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.00E-01	1.76E-04	1.06E-04	---	---	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	5.29E-05		---		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0091H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	2.05E-01	N	1.26E-03	---	2.00E+00	**6E-04**	**---**	1.08E-04	3.00E-05	**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	4.40E-01	Y	2.71E-03	---	3.00E+01	**9E-05**	**---**	2.33E-04	5.00E-06	**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	4.00E-02	Y	2.47E-04	---	7.00E+00	**4E-05**	**---**	2.11E-05	2.60E-05	**5E-10**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	6.80E-01	Y	4.19E-03	---	3.00E+01	**1E-04**	**---**	3.59E-04	7.80E-06	**3E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	2.84E-03	---	1.00E+02	**3E-05**	**---**	2.43E-04	6.00E-06	**1E-09**
CHLOROFORM	67-66-3	3.30E-01	Y	2.04E-03	---	9.77E+01	**2E-05**	**---**	1.74E-04	2.30E-05	**4E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	2.10E-01	Y	1.30E-03	---	1.00E+03	**1E-06**	**---**	1.11E-04	2.50E-06	**3E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	8.00E-01	Y	4.93E-03	---	1.00E+02	**5E-05**	**---**	4.23E-04	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	1.90E-01	Y	1.17E-03	---	4.00E+01	**3E-05**	**---**	1.00E-04	2.60E-07	**3E-11**
TRICHLOROETHENE	79-01-6	1.00E-01	N	6.17E-04	---	2.00E+00	**3E-04**	**---**	5.29E-05	4.10E-06	M **4E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0091H**	**Total Inhalation**	**1E-03**	**0E+00**	**1E-08**
		Based on NDs only	**9E-04**	**0E+00**	**4E-09**
		Based on Detects only	**4E-04**	**All ND**	**1E-08**
		Site-related only	**4E-04**	**0E+00**	**2E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0091H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.00E-01	1.76E-04	1.06E-04	---	---	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	5.29E-05		---		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0098H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	2.10E-01	N	1.30E-03	---	2.00E+00	**6E-04**	**---**	1.11E-04	3.00E-05	**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	3.45E-01	N	2.13E-03	---	3.00E+01	**7E-05**	**---**	1.82E-04	5.00E-06	**9E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	8.63E-04	---	7.00E+00	**1E-04**	**---**	7.40E-05	2.60E-05	**2E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	7.60E-01	Y	4.69E-03	---	3.00E+01	**2E-04**	**---**	4.02E-04	7.80E-06	**3E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	2.78E-03	---	1.00E+02	**3E-05**	**---**	2.38E-04	6.00E-06	**1E-09**
CHLOROFORM	67-66-3	1.30E-01	Y	8.02E-04	---	9.77E+01	**8E-06**	**---**	6.87E-05	2.30E-05	**2E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	3.40E+00	Y	2.10E-02	---	1.00E+03	**2E-05**	**---**	1.80E-03	2.50E-06	**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	7.90E+00	Y	4.87E-02	---	1.00E+02	**5E-04**	**---**	4.18E-03	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	1.30E-01	Y	8.02E-04	---	4.00E+01	**2E-05**	**---**	6.87E-05	2.60E-07	**2E-11**
TRICHLOROETHENE	79-01-6	1.00E-01	N	6.17E-04	---	2.00E+00	**3E-04**	**---**	5.29E-05	4.10E-06	M **4E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0098H**	**Total Inhalation**	**2E-03**	**0E+00**	**2E-08**
		Based on NDs only	**1E-03**	**0E+00**	**5E-09**
		Based on Detects only	**8E-04**	**All ND**	**1E-08**
		Site-related only	**4E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0098H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	1.76E-04	1.06E-04	---	---	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	5.29E-05		---		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0102H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.85E-01	N	1.14E-03	---	2.00E+00	**6E-04**	**---**	9.78E-05	3.00E-05		**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.00E-01	N	1.85E-03	---	3.00E+01	**6E-05**	**---**	1.59E-04	5.00E-06		**8E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	7.00E-02	N	4.32E-04	---	7.00E+00	**6E-05**	**---**	3.70E-05	2.60E-05		**1E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	3.60E-01	Y	2.22E-03	---	3.00E+01	**7E-05**	**---**	1.90E-04	7.80E-06		**1E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	2.78E-03	---	1.00E+02	**3E-05**	**---**	2.38E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	3.30E-01	Y	2.04E-03	---	9.77E+01	**2E-05**	**---**	1.74E-04	2.30E-05		**4E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	7.00E-02	N	4.32E-04	---	1.00E+03	**4E-07**	**---**	3.70E-05	2.50E-06		**9E-11**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	3.50E-01	Y	2.16E-03	---	1.00E+02	**2E-05**	**---**	1.85E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.15E-01	N	7.09E-04	---	4.00E+01	**2E-05**	**---**	6.08E-05	2.60E-07		**2E-11**
TRICHLOROETHENE	79-01-6	9.00E-02	N	5.55E-04	---	2.00E+00	**3E-04**	**---**	4.76E-05	4.10E-06	M	**4E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0102H**	**Total Inhalation**	**1E-03**	**0E+00**	**1E-08**
		Based on NDs only	**1E-03**	**0E+00**	**5E-09**
		Based on Detects only	**1E-04**	**All ND**	**7E-09**
		Site-related only	**4E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0102H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	9.00E-02	1.59E-04	9.51E-05	---	---	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	9.00E-02	4.76E-05		---		3.1E-06	NHL+liver	1E-10		---		**1E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0118H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult		CTE lifetime
TWFnc (unitless)		6.17E-03	#N/A	TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.10E-01	N	1.30E-03	---	2.00E+00	**6E-04**	**---**	1.11E-04	3.00E-05		**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.45E-01	N	2.13E-03	---	3.00E+01	**7E-05**	**---**	1.82E-04	5.00E-06		**9E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	7.50E-02	N	4.63E-04	---	7.00E+00	**7E-05**	**---**	3.96E-05	2.60E-05		**1E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.30E-01	Y	3.27E-03	---	3.00E+01	**1E-04**	**---**	2.80E-04	7.80E-06		**2E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	2.71E-03	---	1.00E+02	**3E-05**	**---**	2.33E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	9.40E-02	Y	5.80E-04	---	9.77E+01	**6E-06**	**---**	4.97E-05	2.30E-05		**1E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.20E-01	Y	7.40E-04	---	1.00E+03	**7E-07**	**---**	6.34E-05	2.50E-06		**2E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	4.50E-01	Y	2.78E-03	---	1.00E+02	**3E-05**	**---**	2.38E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.40E-01	Y	8.63E-04	---	4.00E+01	**2E-05**	**---**	7.40E-05	2.60E-07		**2E-11**
TRICHLOROETHENE	79-01-6	1.00E-01	N	6.17E-04	---	2.00E+00	**3E-04**	**---**	5.29E-05	4.10E-06	M	**4E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0118H**	**Total Inhalation**	**1E-03**	**0E+00**	**1E-08**
		Based on NDs only	**1E-03**	**0E+00**	**6E-09**
		Based on Detects only	**2E-04**	**All ND**	**5E-09**
		Site-related only	**4E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0118H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.00E-01	1.76E-04	1.06E-04	---	---	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	5.29E-05		---		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0121H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	1.90E-01	N	1.17E-03	---	2.00E+00	**6E-04**	**---**	1.00E-04	3.00E-05	**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	3.15E-01	N	1.94E-03	---	3.00E+01	**6E-05**	**---**	1.67E-04	5.00E-06	**8E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	1.50E-01	Y	9.25E-04	---	7.00E+00	**1E-04**	**---**	7.93E-05	2.60E-05	**2E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	8.50E-01	Y	5.24E-03	---	3.00E+01	**2E-04**	**---**	4.49E-04	7.80E-06	**4E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	3.60E-01	Y	2.22E-03	---	1.00E+02	**2E-05**	**---**	1.90E-04	6.00E-06	**1E-09**
CHLOROFORM	67-66-3	1.20E-01	Y	7.40E-04	---	9.77E+01	**8E-06**	**---**	6.34E-05	2.30E-05	**1E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	2.40E+00	Y	1.48E-02	---	1.00E+03	**1E-05**	**---**	1.27E-03	2.50E-06	**3E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	5.10E+00	Y	3.15E-02	---	1.00E+02	**3E-04**	**---**	2.70E-03	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	1.40E-01	Y	8.63E-04	---	4.00E+01	**2E-05**	**---**	7.40E-05	2.60E-07	**2E-11**
TRICHLOROETHENE	79-01-6	9.50E-02	N	5.86E-04	---	2.00E+00	**3E-04**	**---**	5.02E-05	4.10E-06	M **4E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M **---**

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Daycare children	**0121H**	**Total Inhalation**	**2E-03**	**0E+00**	**2E-08**
		Based on NDs only	**9E-04**	**0E+00**	**4E-09**
		Based on Detects only	**7E-04**	**All ND**	**1E-08**
		Site-related only	**4E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0121H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	9.50E-02	1.67E-04	1.00E-04	---	---	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	9.50E-02	5.02E-05		---		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0122H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult		CTE lifetime
TWFnc (unitless)		6.17E-03	#N/A	TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.00E-01	N	1.23E-03	---	2.00E+00	**6E-04**	**---**	1.06E-04	3.00E-05		**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.30E-01	N	2.04E-03	---	3.00E+01	**7E-05**	**---**	1.74E-04	5.00E-06		**9E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	6.20E-02	Y	3.82E-04	---	7.00E+00	**5E-05**	**---**	3.28E-05	2.60E-05		**9E-10**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	7.00E-01	Y	4.32E-03	---	3.00E+01	**1E-04**	**---**	3.70E-04	7.80E-06		**3E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	2.78E-03	---	1.00E+02	**3E-05**	**---**	2.38E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	9.80E-02	Y	6.04E-04	---	9.77E+01	**6E-06**	**---**	5.18E-05	2.30E-05		**1E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.50E+00	Y	1.54E-02	---	1.00E+03	**2E-05**	**---**	1.32E-03	2.50E-06		**3E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	7.20E+00	Y	4.44E-02	---	1.00E+02	**4E-04**	**---**	3.81E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.80E-01	Y	1.11E-03	---	4.00E+01	**3E-05**	**---**	9.51E-05	2.60E-07		**2E-11**
TRICHLOROETHENE	79-01-6	1.00E-01	N	6.17E-04	---	2.00E+00	**3E-04**	**---**	5.29E-05	4.10E-06	M	**4E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0122H**	**Total Inhalation**	**2E-03**	**0E+00**	**1E-08**
		Based on NDs only	**1E-03**	**0E+00**	**4E-09**
		Based on Detects only	**7E-04**	**All ND**	**1E-08**
		Site-related only	**4E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0122H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.00E-01	1.76E-04	1.06E-04	---	---	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	5.29E-05		---		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0135H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	1.90E-01	N	1.17E-03	---	2.00E+00	**6E-04**	**---**	1.00E-04	3.00E-05	**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	3.10E-01	N	1.91E-03	---	3.00E+01	**6E-05**	**---**	1.64E-04	5.00E-06	**8E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	7.00E-02	N	4.32E-04	---	7.00E+00	**6E-05**	**---**	3.70E-05	2.60E-05	**1E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	5.80E-01	Y	3.58E-03	---	3.00E+01	**1E-04**	**---**	3.07E-04	7.80E-06	**2E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	2.84E-03	---	1.00E+02	**3E-05**	**---**	2.43E-04	6.00E-06	**1E-09**
CHLOROFORM	67-66-3	1.10E-01	Y	6.78E-04	---	9.77E+01	**7E-06**	**---**	5.81E-05	2.30E-05	**1E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	1.60E-01	Y	9.87E-04	---	1.00E+03	**1E-06**	**---**	8.46E-05	2.50E-06	**2E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	5.20E-01	Y	3.21E-03	---	1.00E+02	**3E-05**	**---**	2.75E-04	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	1.50E-01	Y	9.25E-04	---	4.00E+01	**2E-05**	**---**	7.93E-05	2.60E-07	**2E-11**
TRICHLOROETHENE	79-01-6	9.00E-02	N	5.55E-04	---	2.00E+00	**3E-04**	**---**	4.76E-05	4.10E-06	M **4E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M **---**

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Daycare children	**0135H**	**Total Inhalation**	**1E-03**	**0E+00**	**1E-08**
		Based on NDs only	**1E-03**	**0E+00**	**5E-09**
		Based on Detects only	**2E-04**	**All ND**	**5E-09**
		Site-related only	**4E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0135H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	9.00E-02	1.59E-04	9.51E-05	---	---	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	9.00E-02	4.76E-05		---		3.1E-06	NHL+liver	1E-10		---		**1E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0139H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult		CTE lifetime
TWFnc (unitless)		6.17E-03	#N/A	TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.30E-01	N	1.42E-03	---	2.00E+00	**7E-04**	**---**	1.22E-04	3.00E-05		**4E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.70E-01	N	2.28E-03	---	3.00E+01	**8E-05**	**---**	1.96E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	6.10E-02	Y	3.76E-04	---	7.00E+00	**5E-05**	**---**	3.22E-05	2.60E-05		**8E-10**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.10E-01	Y	3.15E-03	---	3.00E+01	**1E-04**	**---**	2.70E-04	7.80E-06		**2E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	2.47E-03	---	1.00E+02	**2E-05**	**---**	2.11E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	7.70E-02	Y	4.75E-04	---	9.77E+01	**5E-06**	**---**	4.07E-05	2.30E-05		**9E-10**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	8.00E-02	Y	4.93E-04	---	1.00E+03	**5E-07**	**---**	4.23E-05	2.50E-06		**1E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.90E-01	Y	1.79E-03	---	1.00E+02	**2E-05**	**---**	1.53E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.40E-01	N	8.63E-04	---	4.00E+01	**2E-05**	**---**	7.40E-05	2.60E-07		**2E-11**
TRICHLOROETHENE	79-01-6	1.10E-01	N	6.78E-04	---	2.00E+00	**3E-04**	**---**	5.81E-05	4.10E-06	M	**5E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0139H**	**Total Inhalation**	**1E-03**	**0E+00**	**1E-08**
		Based on NDs only	**1E-03**	**0E+00**	**5E-09**
		Based on Detects only	**2E-04**	**All ND**	**5E-09**
		Site-related only	**4E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0139H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.10E-01	1.94E-04	1.16E-04	---	---	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	1.10E-01	5.81E-05		---		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0146H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult		CTE lifetime
TWFnc (unitless)		6.17E-03	#N/A	TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.95E-01	N	1.20E-03	---	2.00E+00	**6E-04**	**---**	1.03E-04	3.00E-05		**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	1.80E-01	Y	1.11E-03	---	3.00E+01	**4E-05**	**---**	9.51E-05	5.00E-06		**5E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	5.50E-02	Y	3.39E-04	---	7.00E+00	**5E-05**	**---**	2.91E-05	2.60E-05		**8E-10**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	4.20E-01	Y	2.59E-03	---	3.00E+01	**9E-05**	**---**	2.22E-04	7.80E-06		**2E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	2.59E-03	---	1.00E+02	**3E-05**	**---**	2.22E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	7.60E-02	Y	4.69E-04	---	9.77E+01	**5E-06**	**---**	4.02E-05	2.30E-05		**9E-10**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	7.10E-02	Y	4.38E-04	---	1.00E+03	**4E-07**	**---**	3.75E-05	2.50E-06		**9E-11**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.40E-01	Y	1.48E-03	---	1.00E+02	**1E-05**	**---**	1.27E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.20E-01	N	7.40E-04	---	4.00E+01	**2E-05**	**---**	6.34E-05	2.60E-07		**2E-11**
TRICHLOROETHENE	79-01-6	9.50E-02	N	5.86E-04	---	2.00E+00	**3E-04**	**---**	5.02E-05	4.10E-06	M	**4E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0146H**	**Total Inhalation**	**1E-03**	**0E+00**	**9E-09**
		Based on NDs only	**9E-04**	**0E+00**	**4E-09**
		Based on Detects only	**2E-04**	**All ND**	**5E-09**
		Site-related only	**3E-04**	**0E+00**	**9E-10**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0146H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	9.50E-02	1.67E-04	1.00E-04	---	---	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	9.50E-02	5.02E-05		---		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0148H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	2.05E-01	N	1.26E-03	---	2.00E+00	**6E-04**	**---**	1.08E-04	3.00E-05	**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	2.60E-01	Y	1.60E-03	---	3.00E+01	**5E-05**	**---**	1.37E-04	5.00E-06	**7E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	8.63E-04	---	7.00E+00	**1E-04**	**---**	7.40E-05	2.60E-05	**2E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	7.20E-01	Y	4.44E-03	---	3.00E+01	**1E-04**	**---**	3.81E-04	7.80E-06	**3E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	2.65E-03	---	1.00E+02	**3E-05**	**---**	2.27E-04	6.00E-06	**1E-09**
CHLOROFORM	67-66-3	1.30E-01	Y	8.02E-04	---	9.77E+01	**8E-06**	**---**	6.87E-05	2.30E-05	**2E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	3.80E+00	Y	2.34E-02	---	1.00E+03	**2E-05**	**---**	2.01E-03	2.50E-06	**5E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	9.00E+00	Y	5.55E-02	---	1.00E+02	**6E-04**	**---**	4.76E-03	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	1.50E-01	Y	9.25E-04	---	4.00E+01	**2E-05**	**---**	7.93E-05	2.60E-07	**2E-11**
TRICHLOROETHENE	79-01-6	1.00E-01	N	6.17E-04	---	2.00E+00	**3E-04**	**---**	5.29E-05	4.10E-06	M **4E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0148H**	**Total Inhalation**	**2E-03**	**0E+00**	**2E-08**
		Based on NDs only	**9E-04**	**0E+00**	**4E-09**
		Based on Detects only	**1E-03**	**All ND**	**1E-08**
		Site-related only	**4E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0148H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.00E-01	1.76E-04	1.06E-04	---	---	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	5.29E-05		---		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0153H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult		CTE lifetime
TWFnc (unitless)		6.17E-03	#N/A	TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.05E-01	N	1.26E-03	---	2.00E+00	**6E-04**	**---**	1.08E-04	3.00E-05		**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	1.10E-01	Y	6.78E-04	---	3.00E+01	**2E-05**	**---**	5.81E-05	5.00E-06		**3E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	9.60E-02	Y	5.92E-04	---	7.00E+00	**8E-05**	**---**	5.07E-05	2.60E-05		**1E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	7.40E-01	Y	4.56E-03	---	3.00E+01	**2E-04**	**---**	3.91E-04	7.80E-06		**3E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	2.71E-03	---	1.00E+02	**3E-05**	**---**	2.33E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	1.20E-01	Y	7.40E-04	---	9.77E+01	**8E-06**	**---**	6.34E-05	2.30E-05		**1E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	4.70E+00	Y	2.90E-02	---	1.00E+03	**3E-05**	**---**	2.48E-03	2.50E-06		**6E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.20E+01	Y	7.40E-02	---	1.00E+02	**7E-04**	**---**	6.34E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	2.00E-01	Y	1.23E-03	---	4.00E+01	**3E-05**	**---**	1.06E-04	2.60E-07		**3E-11**
TRICHLOROETHENE	79-01-6	1.00E-01	N	6.17E-04	---	2.00E+00	**3E-04**	**---**	5.29E-05	4.10E-06	M	**4E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0153H**	**Total Inhalation**	**2E-03**	**0E+00**	**2E-08**
		Based on NDs only	**9E-04**	**0E+00**	**4E-09**
		Based on Detects only	**1E-03**	**All ND**	**1E-08**
		Site-related only	**4E-04**	**0E+00**	**8E-10**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0153H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.00E-01	1.76E-04	1.06E-04	---	---	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	5.29E-05		---		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0162H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.90E-01	N	1.17E-03	---	2.00E+00	**6E-04**	**---**	1.00E-04	3.00E-05		**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.10E-01	N	1.91E-03	---	3.00E+01	**6E-05**	**---**	1.64E-04	5.00E-06		**8E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	6.80E-02	Y	4.19E-04	---	7.00E+00	**6E-05**	**---**	3.59E-05	2.60E-05		**9E-10**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.10E-01	Y	3.15E-03	---	3.00E+01	**1E-04**	**---**	2.70E-04	7.80E-06		**2E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	2.65E-03	---	1.00E+02	**3E-05**	**---**	2.27E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	9.80E-02	Y	6.04E-04	---	9.77E+01	**6E-06**	**---**	5.18E-05	2.30E-05		**1E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.20E-01	Y	7.40E-04	---	1.00E+03	**7E-07**	**---**	6.34E-05	2.50E-06		**2E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	4.00E-01	Y	2.47E-03	---	1.00E+02	**2E-05**	**---**	2.11E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	2.70E-01	Y	1.67E-03	---	4.00E+01	**4E-05**	**---**	1.43E-04	2.60E-07		**4E-11**
TRICHLOROETHENE	79-01-6	9.00E-02	N	5.55E-04	---	2.00E+00	**3E-04**	**---**	4.76E-05	4.10E-06	M	**4E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0162H**	**Total Inhalation**	**1E-03**	**0E+00**	**1E-08**
		Based on NDs only	**9E-04**	**0E+00**	**4E-09**
		Based on Detects only	**3E-04**	**All ND**	**6E-09**
		Site-related only	**4E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0162H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	9.00E-02	1.59E-04	9.51E-05	---	---	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	9.00E-02	4.76E-05		---		3.1E-06	NHL+liver	1E-10		---		**1E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0173H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult		CTE lifetime
TWFnc (unitless)		6.17E-03	#N/A	TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.00E-01	N	1.23E-03	---	2.00E+00	**6E-04**	**---**	1.06E-04	3.00E-05		**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.30E-01	N	2.04E-03	---	3.00E+01	**7E-05**	**---**	1.74E-04	5.00E-06		**9E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	5.40E-02	Y	3.33E-04	---	7.00E+00	**5E-05**	**---**	2.85E-05	2.60E-05		**7E-10**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.10E-01	Y	3.15E-03	---	3.00E+01	**1E-04**	**---**	2.70E-04	7.80E-06		**2E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	2.71E-03	---	1.00E+02	**3E-05**	**---**	2.33E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	7.20E-02	Y	4.44E-04	---	9.77E+01	**5E-06**	**---**	3.81E-05	2.30E-05		**9E-10**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	7.10E-02	Y	4.38E-04	---	1.00E+03	**4E-07**	**---**	3.75E-05	2.50E-06		**9E-11**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.50E-01	Y	1.54E-03	---	1.00E+02	**2E-05**	**---**	1.32E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.25E-01	N	7.71E-04	---	4.00E+01	**2E-05**	**---**	6.61E-05	2.60E-07		**2E-11**
TRICHLOROETHENE	79-01-6	1.00E-01	N	6.17E-04	---	2.00E+00	**3E-04**	**---**	5.29E-05	4.10E-06	M	**4E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0173H**	**Total Inhalation**	**1E-03**	**0E+00**	**1E-08**
		Based on NDs only	**1E-03**	**0E+00**	**5E-09**
		Based on Detects only	**2E-04**	**All ND**	**5E-09**
		Site-related only	**4E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0173H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.00E-01	1.76E-04	1.06E-04	---	---	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	5.29E-05		---		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0174H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult		CTE lifetime
TWFnc (unitless)		6.17E-03	#N/A	TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.95E-01	N	1.20E-03	---	2.00E+00	**6E-04**	**---**	1.03E-04	3.00E-05		**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.15E-01	N	1.94E-03	---	3.00E+01	**6E-05**	**---**	1.67E-04	5.00E-06		**8E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	5.50E-02	Y	3.39E-04	---	7.00E+00	**5E-05**	**---**	2.91E-05	2.60E-05		**8E-10**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	4.10E-01	Y	2.53E-03	---	3.00E+01	**8E-05**	**---**	2.17E-04	7.80E-06		**2E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	2.71E-03	---	1.00E+02	**3E-05**	**---**	2.33E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	7.00E-02	Y	4.32E-04	---	9.77E+01	**4E-06**	**---**	3.70E-05	2.30E-05		**9E-10**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	6.70E-02	Y	4.13E-04	---	1.00E+03	**4E-07**	**---**	3.54E-05	2.50E-06		**9E-11**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.30E-01	Y	1.42E-03	---	1.00E+02	**1E-05**	**---**	1.22E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.20E-01	N	7.40E-04	---	4.00E+01	**2E-05**	**---**	6.34E-05	2.60E-07		**2E-11**
TRICHLOROETHENE	79-01-6	9.50E-02	N	5.86E-04	---	2.00E+00	**3E-04**	**---**	5.02E-05	4.10E-06	M	**4E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0174H**	**Total Inhalation**	**1E-03**	**0E+00**	**9E-09**
		Based on NDs only	**1E-03**	**0E+00**	**4E-09**
		Based on Detects only	**2E-04**	**All ND**	**5E-09**
		Site-related only	**4E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0174H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	1.67E-04	1.00E-04	---	---	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	9.50E-02	5.02E-05		---		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0302H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.65E-01	N	1.02E-03	---	2.00E+00	**5E-04**	**---**	8.72E-05	3.00E-05		**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	2.70E-01	N	1.67E-03	---	3.00E+01	**6E-05**	**---**	1.43E-04	5.00E-06		**7E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	9.70E-02	Y	5.98E-04	---	7.00E+00	**9E-05**	**---**	5.13E-05	2.60E-05		**1E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.40E-01	Y	3.33E-03	---	3.00E+01	**1E-04**	**---**	2.85E-04	7.80E-06		**2E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.20E-01	Y	1.97E-03	---	1.00E+02	**2E-05**	**---**	1.69E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	8.20E-02	Y	5.06E-04	---	9.77E+01	**5E-06**	**---**	4.33E-05	2.30E-05		**1E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	6.40E-01	Y	3.95E-03	---	1.00E+03	**4E-06**	**---**	3.38E-04	2.50E-06		**8E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.90E+00	Y	1.79E-02	---	1.00E+02	**2E-04**	**---**	1.53E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	3.70E-01	Y	2.28E-03	---	4.00E+01	**6E-05**	**---**	1.96E-04	2.60E-07		**5E-11**
TRICHLOROETHENE	79-01-6	8.00E-02	N	4.93E-04	---	2.00E+00	**2E-04**	**---**	4.23E-05	4.10E-06	M	**4E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0302H**	**Total Inhalation**	**1E-03**	**0E+00**	**1E-08**
		Based on NDs only	**8E-04**	**0E+00**	**4E-09**
		Based on Detects only	**5E-04**	**All ND**	**6E-09**
		Site-related only	**4E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0302H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	8.00E-02	1.41E-04	8.46E-05	---	---	1.0E-06	kidney	1E-10	8E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	8.00E-02	4.23E-05		---		3.1E-06	NHL+liver	1E-10		---		**1E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0334H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult		CTE lifetime
TWFnc (unitless)		6.17E-03	#N/A	TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.22E+00	N	1.37E-02	---	2.00E+00	**7E-03**	**---**	1.17E-03	3.00E-05		**4E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.61E-01	N	2.22E-03	---	3.00E+01	**7E-05**	**---**	1.91E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.03E-01	Y	6.35E-04	---	7.00E+00	**9E-05**	**---**	5.44E-05	2.60E-05		**1E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	7.06E-01	Y	4.35E-03	---	3.00E+01	**1E-04**	**---**	3.73E-04	7.80E-06		**3E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.52E-01	Y	3.40E-03	---	1.00E+02	**3E-05**	**---**	2.92E-04	6.00E-06		**2E-09**
CHLOROFORM	67-66-3	4.87E-02	N	3.00E-04	---	9.77E+01	**3E-06**	**---**	2.57E-05	2.30E-05		**6E-10**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	9.84E-01	Y	6.07E-03	---	1.00E+03	**6E-06**	**---**	5.20E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	3.67E+00	Y	2.26E-02	---	1.00E+02	**2E-04**	**---**	1.94E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	3.74E-01	Y	2.31E-03	---	4.00E+01	**6E-05**	**---**	1.98E-04	2.60E-07		**5E-11**
TRICHLOROETHENE	79-01-6	1.42E-01	Y	8.76E-04	---	2.00E+00	**4E-04**	**---**	7.51E-05	4.10E-06	M	**6E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0334H**	**Total Inhalation**	**8E-03**	**0E+00**	**4E-08**
		Based on NDs only	**7E-03**	**0E+00**	**4E-08**
		Based on Detects only	**1E-03**	**All ND**	**8E-09**
		Site-related only	**6E-04**	**0E+00**	**2E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0334H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.42E-01	2.50E-04	1.50E-04	---	---	1.0E-06	kidney	3E-10	2E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	1.42E-01	7.51E-05		---		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**365S**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult		CTE lifetime
TWFnc (unitless)		6.17E-03	#N/A	TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.95E-01	N	1.20E-03	---	2.00E+00	**6E-04**	**---**	1.03E-04	3.00E-05		**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.15E-01	N	1.94E-03	---	3.00E+01	**6E-05**	**---**	1.67E-04	5.00E-06		**8E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	7.20E-02	Y	4.44E-04	---	7.00E+00	**6E-05**	**---**	3.81E-05	2.60E-05		**1E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	4.60E-01	Y	2.84E-03	---	3.00E+01	**9E-05**	**---**	2.43E-04	7.80E-06		**2E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	2.34E-03	---	1.00E+02	**2E-05**	**---**	2.01E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	9.00E-02	Y	5.55E-04	---	9.77E+01	**6E-06**	**---**	4.76E-05	2.30E-05		**1E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	3.90E-01	Y	2.41E-03	---	1.00E+03	**2E-06**	**---**	2.06E-04	2.50E-06		**5E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.90E+00	Y	1.17E-02	---	1.00E+02	**1E-04**	**---**	1.00E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	2.10E-01	Y	1.30E-03	---	4.00E+01	**3E-05**	**---**	1.11E-04	2.60E-07		**3E-11**
TRICHLOROETHENE	79-01-6	9.50E-02	N	5.86E-04	---	2.00E+00	**3E-04**	**---**	5.02E-05	4.10E-06	M	**4E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**365S**	**Total Inhalation**	**1E-03**	**0E+00**	**1E-08**
		Based on NDs only	**1E-03**	**0E+00**	**4E-09**
		Based on Detects only	**3E-04**	**All ND**	**6E-09**
		Site-related only	**4E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**365S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	1.67E-04	1.00E-04	---	---	1.0E-06	kidney	2E-10	1E-10	---	---	**3E-10**
TRICHLOROETHENE	79-01-6	9.50E-02	5.02E-05		---		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0381H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	1.65E-01	N	1.02E-03	---	2.00E+00	**5E-04**	**---**	8.72E-05	3.00E-05	**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	1.50E-01	Y	9.25E-04	---	3.00E+01	**3E-05**	**---**	7.93E-05	5.00E-06	**4E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	4.75E-04	---	7.00E+00	**7E-05**	**---**	4.07E-05	2.60E-05	**1E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	4.30E-01	Y	2.65E-03	---	3.00E+01	**9E-05**	**---**	2.27E-04	7.80E-06	**2E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	3.70E-01	Y	2.28E-03	---	1.00E+02	**2E-05**	**---**	1.96E-04	6.00E-06	**1E-09**
CHLOROFORM	67-66-3	9.50E-02	Y	5.86E-04	---	9.77E+01	**6E-06**	**---**	5.02E-05	2.30E-05	**1E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	2.80E-01	Y	1.73E-03	---	1.00E+03	**2E-06**	**---**	1.48E-04	2.50E-06	**4E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	1.20E+00	Y	7.40E-03	---	1.00E+02	**7E-05**	**---**	6.34E-04	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	1.90E-01	Y	1.17E-03	---	4.00E+01	**3E-05**	**---**	1.00E-04	2.60E-07	**3E-11**
TRICHLOROETHENE	79-01-6	8.00E-02	N	4.93E-04	---	2.00E+00	**2E-04**	**---**	4.23E-05	4.10E-06	M **4E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0381H**	**Total Inhalation**	**1E-03**	**0E+00**	**9E-09**
		Based on NDs only	**8E-04**	**0E+00**	**3E-09**
		Based on Detects only	**3E-04**	**All ND**	**6E-09**
		Site-related only	**3E-04**	**0E+00**	**8E-10**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0381H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	8.00E-02	1.41E-04	8.46E-05	---	---	1.0E-06	kidney	1E-10	8E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	8.00E-02	4.23E-05		---		3.1E-06	NHL+liver	1E-10		---		**1E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**B32**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult		CTE lifetime
TWFnc (unitless)		6.17E-03	#N/A	TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.65E-01	N	1.02E-03	---	2.00E+00	**5E-04**	**---**	8.72E-05	3.00E-05		**3E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	2.70E-01	N	1.67E-03	---	3.00E+01	**6E-05**	**---**	1.43E-04	5.00E-06		**7E-10**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	7.40E-02	Y	4.56E-04	---	7.00E+00	**7E-05**	**---**	3.91E-05	2.60E-05		**1E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	4.90E-01	Y	3.02E-03	---	3.00E+01	**1E-04**	**---**	2.59E-04	7.80E-06		**2E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	6.90E-01	Y	4.26E-03	---	1.00E+02	**4E-05**	**---**	3.65E-04	6.00E-06		**2E-09**
CHLOROFORM	67-66-3	9.00E-02	Y	5.55E-04	---	9.77E+01	**6E-06**	**---**	4.76E-05	2.30E-05		**1E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	7.80E-01	Y	4.81E-03	---	1.00E+03	**5E-06**	**---**	4.12E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	3.60E+00	Y	2.22E-02	---	1.00E+02	**2E-04**	**---**	1.90E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	4.30E-01	Y	2.65E-03	---	4.00E+01	**7E-05**	**---**	2.27E-04	2.60E-07		**6E-11**
TRICHLOROETHENE	79-01-6	8.00E-02	N	4.93E-04	---	2.00E+00	**2E-04**	**---**	4.23E-05	4.10E-06	M	**4E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**B32**	**Total Inhalation**	**1E-03**	**0E+00**	**1E-08**
		Based on NDs only	**8E-04**	**0E+00**	**4E-09**
		Based on Detects only	**5E-04**	**All ND**	**7E-09**
		Site-related only	**4E-04**	**0E+00**	**1E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**B32**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	8.00E-02	1.41E-04	8.46E-05	---	---	1.0E-06	kidney	1E-10	8E-11	---	---	**2E-10**
TRICHLOROETHENE	79-01-6	8.00E-02	4.23E-05		---		3.1E-06	NHL+liver	1E-10		---		**1E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**building 6**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	5.00E-01	N	3.08E-03	---	2.00E+00	**2E-03**	**---**	2.64E-04	3.00E-05	**8E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	7.40E-01	Y	4.56E-03	---	3.00E+01	**2E-04**	**---**	3.91E-04	5.00E-06	**2E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	5.00E-01	N	3.08E-03	---	7.00E+00	**4E-04**	**---**	2.64E-04	2.60E-05	**7E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	3.60E-01	Y	2.22E-03	---	3.00E+01	**7E-05**	**---**	1.90E-04	7.80E-06	**1E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.90E-01	Y	3.02E-03	---	1.00E+02	**3E-05**	**---**	2.59E-04	6.00E-06	**2E-09**
CHLOROFORM	67-66-3	2.40E-01	Y	1.48E-03	---	9.77E+01	**2E-05**	**---**	1.27E-04	2.30E-05	**3E-09**
ETHYL ACETATE	141-78-6	8.90E+00	Y	5.49E-02	---	7.00E+01	**8E-04**	**---**	4.70E-03	-	**---**
ETHYLBENZENE	100-41-4	1.80E-01	Y	1.11E-03	---	1.00E+03	**1E-06**	**---**	9.51E-05	2.50E-06	**2E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	7.10E-01	Y	4.38E-03	---	1.00E+02	**4E-05**	**---**	3.75E-04	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	8.31E+00	Y	5.12E-02	---	4.00E+01	**1E-03**	**---**	4.39E-03	2.60E-07	**1E-09**
TRICHLOROETHENE	79-01-6	5.00E-01	N	3.08E-03	---	2.00E+00	**2E-03**	**---**	2.64E-04	4.10E-06	M **2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**building 6**	**Total Inhalation**	**6E-03**	**0E+00**	**3E-08**
		Based on NDs only	**4E-03**	**0E+00**	**2E-08**
		Based on Detects only	**2E-03**	**All ND**	**9E-09**
		Site-related only	**3E-03**	**0E+00**	**5E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**building 6**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-01	8.81E-04	5.29E-04	---	---	1.0E-06	kidney	9E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	5.00E-01	2.64E-04		---		3.1E-06	NHL+liver	8E-10		---		**8E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**building 7**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	6.17E-03	#N/A		TWFc (unitless)	5.29E-04

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	4.40E-01	N	2.71E-03	---	2.00E+00	**1E-03**	**---**	2.33E-04	3.00E-05		**7E-09**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	4.50E-01	N	2.78E-03	---	3.00E+01	**9E-05**	**---**	2.38E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	4.50E-01	N	2.78E-03	---	7.00E+00	**4E-04**	**---**	2.38E-04	2.60E-05		**6E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	2.00E-01	Y	1.23E-03	---	3.00E+01	**4E-05**	**---**	1.06E-04	7.80E-06		**8E-10**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.70E-01	Y	2.28E-03	---	1.00E+02	**2E-05**	**---**	1.96E-04	6.00E-06		**1E-09**
CHLOROFORM	67-66-3	4.60E-01	N	2.84E-03	---	9.77E+01	**3E-05**	**---**	2.43E-04	2.30E-05		**6E-09**
ETHYL ACETATE	141-78-6	1.00E+00	Y	6.17E-03	---	7.00E+01	**9E-05**	**---**	5.29E-04	-		**---**
ETHYLBENZENE	100-41-4	4.40E-01	N	2.71E-03	---	1.00E+03	**3E-06**	**---**	2.33E-04	2.50E-06		**6E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.70E-01	Y	1.67E-03	---	1.00E+02	**2E-05**	**---**	1.43E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	4.50E-01	N	2.78E-03	---	4.00E+01	**7E-05**	**---**	2.38E-04	2.60E-07		**6E-11**
TRICHLOROETHENE	79-01-6	4.50E-01	N	2.78E-03	---	2.00E+00	**1E-03**	**---**	2.38E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**building 7**	**Total Inhalation**	**4E-03**	**0E+00**	**2E-08**
		Based on NDs only	**3E-03**	**0E+00**	**2E-08**
		Based on Detects only	**2E-04**	**All ND**	**2E-09**
		Site-related only	**2E-03**	**0E+00**	**3E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**building 7**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	5.29E-04	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	4.50E-01	7.93E-04	4.76E-04	---	---	1.0E-06	kidney	8E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	4.50E-01	2.38E-04		---		3.1E-06	NHL+liver	7E-10		---		**7E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0001H**

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	3.38E-02	1.25E-01	TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0001H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0001H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0002H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0002H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0002H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0003H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	2.05E-01	N	6.94E-03	2.56E-02	2.00E+00	**3E-03**	**1E-02**	2.76E-03	3.00E-05	**8E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	3.35E-01	N	1.13E-02	4.19E-02	3.00E+01	**4E-04**	**1E-03**	4.51E-03	5.00E-06	**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	8.70E-02	Y	2.94E-03	1.09E-02	7.00E+00	**4E-04**	**2E-03**	1.17E-03	2.60E-05	**3E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	1.80E+00	Y	6.09E-02	2.25E-01	3.00E+01	**2E-03**	**8E-03**	2.43E-02	7.80E-06	**2E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	1.29E-02	4.75E-02	1.00E+02	**1E-04**	**5E-04**	5.12E-03	6.00E-06	**3E-08**
CHLOROFORM	67-66-3	1.60E-01	Y	5.41E-03	2.00E-02	9.77E+01	**6E-05**	**2E-04**	2.16E-03	2.30E-05	**5E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	4.30E-01	Y	1.45E-02	5.38E-02	1.00E+03	**1E-05**	**5E-05**	5.80E-03	2.50E-06	**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	1.70E+00	Y	5.75E-02	2.13E-01	1.00E+02	**6E-04**	**2E-03**	2.29E-02	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	1.10E-01	Y	3.72E-03	1.38E-02	4.00E+01	**9E-05**	**3E-04**	1.48E-03	2.60E-07	**4E-10**
TRICHLOROETHENE	79-01-6	2.90E-02	Y	9.81E-04	3.63E-03	2.00E+00	**5E-04**	**2E-03**	M	4.10E-06	M **2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0003H**	**Total Inhalation**	**8E-03**	**3E-02**	**4E-07**
		Based on NDs only	**4E-03**	**1E-02**	**1E-07**
		Based on Detects only	**4E-03**	**1E-02**	**3E-07**
		Site-related only	**1E-03**	**4E-03**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0003H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.90E-02	9.35E-05	5.61E-05	5.44E-04	1.81E-04	1.0E-06	kidney	9E-11	6E-11	5E-10	2E-10	**9E-10**
TRICHLOROETHENE	79-01-6	2.90E-02	2.80E-05		3.63E-04		3.1E-06	NHL+liver	9E-11		1E-09		**1E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0004H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0004H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0004H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0011H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	1.40E-01	Y	4.74E-03	1.75E-02	2.00E+00	**2E-03**	**9E-03**	1.89E-03	3.00E-05	**6E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	1.80E-01	Y	6.09E-03	2.25E-02	3.00E+01	**2E-04**	**8E-04**	2.43E-03	5.00E-06	**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	4.74E-03	1.75E-02	7.00E+00	**7E-04**	**3E-03**	1.89E-03	2.60E-05	**5E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	1.10E+00	Y	3.72E-02	1.38E-01	3.00E+01	**1E-03**	**5E-03**	1.48E-02	7.80E-06	**1E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	1.42E-02	5.25E-02	1.00E+02	**1E-04**	**5E-04**	5.66E-03	6.00E-06	**3E-08**
CHLOROFORM	67-66-3	1.00E+00	Y	3.38E-02	1.25E-01	9.77E+01	**3E-04**	**1E-03**	1.35E-02	2.30E-05	**3E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	9.80E-01	Y	3.32E-02	1.23E-01	1.00E+03	**3E-05**	**1E-04**	1.32E-02	2.50E-06	**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	1.80E+00	Y	6.09E-02	2.25E-01	1.00E+02	**6E-04**	**2E-03**	2.43E-02	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	5.80E-01	Y	1.96E-02	7.26E-02	4.00E+01	**5E-04**	**2E-03**	7.82E-03	2.60E-07	**2E-09**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	9.81E-03	3.63E-02	2.00E+00	**5E-03**	**2E-02**	M	4.10E-06	M **2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0011H**	**Total Inhalation**	**1E-02**	**4E-02**	**6E-07**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**1E-02**	**4E-02**	**6E-07**
		Site-related only	**6E-03**	**2E-02**	**4E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0011H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.90E-01	9.35E-04	5.61E-04	5.44E-03	1.81E-03	1.0E-06	kidney	9E-10	6E-10	5E-09	2E-09	**9E-09**
TRICHLOROETHENE	79-01-6	2.90E-01	2.80E-04		3.63E-03		3.1E-06	NHL+liver	9E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0012H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0012H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0012H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0013H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0013H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0013H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0025H**

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	3.38E-02	1.25E-01	TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0025H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0025H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0026H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	5.53E-01	N	1.87E-02	6.91E-02	2.00E+00	**9E-03**	**3E-02**	7.45E-03	3.00E-05		**2E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	1.40E-01	Y	4.74E-03	1.75E-02	3.00E+01	**2E-04**	**6E-04**	1.89E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	6.00E-02	Y	2.03E-03	7.51E-03	7.00E+00	**3E-04**	**1E-03**	8.09E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.30E-01	Y	1.79E-02	6.63E-02	3.00E+01	**6E-04**	**2E-03**	7.14E-03	7.80E-06		**6E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	1.42E-02	5.25E-02	1.00E+02	**1E-04**	**5E-04**	5.66E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.10E-01	Y	3.72E-03	1.38E-02	9.77E+01	**4E-05**	**1E-04**	1.48E-03	2.30E-05		**3E-08**
ETHYL ACETATE	141-78-6	1.80E+00	N	6.09E-02	2.25E-01	7.00E+01	**9E-04**	**3E-03**	2.43E-02	-		**---**
ETHYLBENZENE	100-41-4	7.80E-02	Y	2.64E-03	9.76E-03	1.00E+03	**3E-06**	**1E-05**	1.05E-03	2.50E-06		**3E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	7.00E-01	Y	2.37E-02	8.76E-02	1.00E+02	**2E-04**	**9E-04**	9.43E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.00E-01	Y	3.38E-03	1.25E-02	4.00E+01	**8E-05**	**3E-04**	1.35E-03	2.60E-07		**4E-10**
TRICHLOROETHENE	79-01-6	1.35E+00	N	4.57E-02	1.69E-01	2.00E+00	**2E-02**	**8E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0026H**	**Total Inhalation**	**3E-02**	**1E-01**	**5E-07**
		Based on NDs only	**3E-02**	**1E-01**	**3E-07**
		Based on Detects only	**2E-03**	**6E-03**	**2E-07**
		Site-related only	**2E-02**	**9E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0026H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.35E+00	4.35E-03	2.61E-03	2.53E-02	8.44E-03	1.0E-06	kidney	4E-09	3E-09	3E-08	8E-09	**4E-08**
TRICHLOROETHENE	79-01-6	1.35E+00	1.31E-03		1.69E-02		3.1E-06	NHL+liver	4E-09		5E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0027H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0027H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0027H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0029H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0029H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0029H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0030H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
TWFnc (unitless)		3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	5.53E-01	N	1.87E-02	6.91E-02	2.00E+00	**9E-03**	**3E-02**	7.45E-03	3.00E-05		**2E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	**---**	**---**	---	5.00E-06		**---**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.01E+00	N	3.42E-02	1.27E-01	7.00E+00	**5E-03**	**2E-02**	1.36E-02	2.60E-05		**4E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	6.71E-01	Y	2.27E-02	8.39E-02	3.00E+01	**8E-04**	**3E-03**	9.04E-03	7.80E-06		**7E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	1.57E+00	N	5.32E-02	1.97E-01	1.00E+02	**5E-04**	**2E-03**	2.12E-02	6.00E-06		**1E-07**
CHLOROFORM	67-66-3	1.22E+00	N	4.13E-02	1.53E-01	9.77E+01	**4E-04**	**2E-03**	1.64E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	1.80E+00	N	6.09E-02	2.25E-01	7.00E+01	**9E-04**	**3E-03**	2.43E-02	-		**---**
ETHYLBENZENE	100-41-4	1.10E+00	N	3.72E-02	1.38E-01	1.00E+03	**4E-05**	**1E-04**	1.48E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.00E+00	Y	3.38E-02	1.25E-01	1.00E+02	**3E-04**	**1E-03**	1.35E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.70E+00	N	5.75E-02	2.13E-01	4.00E+01	**1E-03**	**5E-03**	2.29E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	1.35E+00	N	4.57E-02	1.69E-01	2.00E+00	**2E-02**	**8E-02**	M	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0030H**	**Total Inhalation**	**4E-02**	**2E-01**	**1E-06**
		Based on NDs only	**4E-02**	**1E-01**	**1E-06**
		Based on Detects only	**1E-03**	**4E-03**	**7E-08**
		Site-related only	**2E-02**	**9E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0030H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.35E+00	4.35E-03	2.61E-03	2.53E-02	8.44E-03	1.0E-06	kidney	4E-09	3E-09	3E-08	8E-09	**4E-08**
TRICHLOROETHENE	79-01-6	1.35E+00	1.31E-03		1.69E-02		3.1E-06	NHL+liver	4E-09		5E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0037H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	1.40E-01	Y	4.74E-03	1.75E-02	2.00E+00	**2E-03**	**9E-03**	1.89E-03	3.00E-05	**6E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	3.70E-01	N	1.25E-02	4.63E-02	3.00E+01	**4E-04**	**2E-03**	4.99E-03	5.00E-06	**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	3.72E-03	1.38E-02	7.00E+00	**5E-04**	**2E-03**	1.48E-03	2.60E-05	**4E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	9.60E-01	Y	3.25E-02	1.20E-01	3.00E+01	**1E-03**	**4E-03**	1.29E-02	7.80E-06	**1E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	1.42E-02	5.25E-02	1.00E+02	**1E-04**	**5E-04**	5.66E-03	6.00E-06	**3E-08**
CHLOROFORM	67-66-3	2.70E-01	Y	9.14E-03	3.38E-02	9.77E+01	**9E-05**	**3E-04**	3.64E-03	2.30E-05	**8E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	9.30E-01	Y	3.15E-02	1.16E-01	1.00E+03	**3E-05**	**1E-04**	1.25E-02	2.50E-06	**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	1.80E+00	Y	6.09E-02	2.25E-01	1.00E+02	**6E-04**	**2E-03**	2.43E-02	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	5.30E-01	Y	1.79E-02	6.63E-02	4.00E+01	**4E-04**	**2E-03**	7.14E-03	2.60E-07	**2E-09**
TRICHLOROETHENE	79-01-6	1.50E-01	Y	5.08E-03	1.88E-02	2.00E+00	**3E-03**	**9E-03**	M	4.10E-06	M **1E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0037H**	**Total Inhalation**	**8E-03**	**3E-02**	**4E-07**
		Based on NDs only	**4E-04**	**2E-03**	**2E-08**
		Based on Detects only	**8E-03**	**3E-02**	**4E-07**
		Site-related only	**3E-03**	**1E-02**	**4E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0037H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.50E-01	4.83E-04	2.90E-04	2.81E-03	9.38E-04	1.0E-06	kidney	5E-10	3E-10	3E-09	9E-10	**5E-09**
TRICHLOROETHENE	79-01-6	1.50E-01	1.45E-04		1.88E-03		3.1E-06	NHL+liver	4E-10		6E-09		**6E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0040H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0040H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0040H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0041H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0041H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0041H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0047H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0047H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0047H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0050H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0050H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0050H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0051H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	2.00E-01	N	6.77E-03	2.50E-02	2.00E+00	**3E-03**	**1E-02**	2.70E-03	3.00E-05	**8E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	4.20E-01	Y	1.42E-02	5.25E-02	3.00E+01	**5E-04**	**2E-03**	5.66E-03	5.00E-06	**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	6.30E-02	Y	2.13E-03	7.88E-03	7.00E+00	**3E-04**	**1E-03**	8.49E-04	2.60E-05	**2E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	5.30E-01	Y	1.79E-02	6.63E-02	3.00E+01	**6E-04**	**2E-03**	7.14E-03	7.80E-06	**6E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	1.56E-02	5.75E-02	1.00E+02	**2E-04**	**6E-04**	6.20E-03	6.00E-06	**4E-08**
CHLOROFORM	67-66-3	1.60E-01	Y	5.41E-03	2.00E-02	9.77E+01	**6E-05**	**2E-04**	2.16E-03	2.30E-05	**5E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	1.30E-01	Y	4.40E-03	1.63E-02	1.00E+03	**4E-06**	**2E-05**	1.75E-03	2.50E-06	**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	5.50E-01	Y	1.86E-02	6.88E-02	1.00E+02	**2E-04**	**7E-04**	7.41E-03	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	2.00E-01	Y	6.77E-03	2.50E-02	4.00E+01	**2E-04**	**6E-04**	2.70E-03	2.60E-07	**7E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M **2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0051H**	**Total Inhalation**	**1E-02**	**4E-02**	**3E-07**
		Based on NDs only	**8E-03**	**3E-02**	**1E-07**
		Based on Detects only	**2E-03**	**7E-03**	**2E-07**
		Site-related only	**5E-03**	**2E-02**	**5E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0051H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0052H**

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult		CTE lifetime
TWFnc (unitless)	3.38E-02	1.25E-01	TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0052H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0052H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0053H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0053H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0053H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0054H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0054H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0054H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0055H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0055H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0055H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0056H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0056H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0056H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0058H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0058H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0058H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0059H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	2.20E-01	N	7.44E-03	2.75E-02	2.00E+00	**4E-03**	**1E-02**	2.96E-03	3.00E-05	**9E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	3.60E-01	N	1.22E-02	4.50E-02	3.00E+01	**4E-04**	**2E-03**	4.85E-03	5.00E-06	**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	9.20E-02	Y	3.11E-03	1.15E-02	7.00E+00	**4E-04**	**2E-03**	1.24E-03	2.60E-05	**3E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	8.30E-01	Y	2.81E-02	1.04E-01	3.00E+01	**9E-04**	**3E-03**	1.12E-02	7.80E-06	**9E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	1.42E-02	5.25E-02	1.00E+02	**1E-04**	**5E-04**	5.66E-03	6.00E-06	**3E-08**
CHLOROFORM	67-66-3	1.00E-01	N	3.38E-03	1.25E-02	9.77E+01	**3E-05**	**1E-04**	1.35E-03	2.30E-05	**3E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	5.40E-01	Y	1.83E-02	6.76E-02	1.00E+03	**2E-05**	**7E-05**	7.28E-03	2.50E-06	**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	1.10E+00	Y	3.72E-02	1.38E-01	1.00E+02	**4E-04**	**1E-03**	1.48E-02	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	3.50E-01	Y	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07	**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M **2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0059H**	**Total Inhalation**	**1E-02**	**4E-02**	**3E-07**
		Based on NDs only	**8E-03**	**3E-02**	**2E-07**
		Based on Detects only	**2E-03**	**8E-03**	**2E-07**
		Site-related only	**5E-03**	**2E-02**	**4E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0059H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0060H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0060H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0060H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0061H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0061H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0061H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0062H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0062H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0062H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0063H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.18E-02	4.38E-02	4.00E+01	**3E-04**	**1E-03**	4.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	8.46E-03	3.13E-02	2.00E+00	**4E-03**	**2E-02**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0063H**	**Total Inhalation**	**5E-03**	**2E-02**	**2E-08**
		Based on NDs only	**5E-03**	**2E-02**	**2E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**5E-03**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0063H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	8.06E-04	4.83E-04	4.69E-03	1.56E-03	1.0E-06	kidney	8E-10	5E-10	5E-09	2E-09	**8E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	2.42E-04		3.13E-03		3.1E-06	NHL+liver	7E-10		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0064H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	1.70E-01	N	5.75E-03	2.13E-02	2.00E+00	**3E-03**	**1E-02**	2.29E-03	3.00E-05	**7E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	2.80E-01	N	9.47E-03	3.50E-02	3.00E+01	**3E-04**	**1E-03**	3.77E-03	5.00E-06	**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	9.90E-02	Y	3.35E-03	1.24E-02	7.00E+00	**5E-04**	**2E-03**	1.33E-03	2.60E-05	**3E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	4.60E-01	Y	1.56E-02	5.75E-02	3.00E+01	**5E-04**	**2E-03**	6.20E-03	7.80E-06	**5E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	1.35E-02	5.00E-02	1.00E+02	**1E-04**	**5E-04**	5.39E-03	6.00E-06	**3E-08**
CHLOROFORM	67-66-3	8.90E-02	Y	3.01E-03	1.11E-02	9.77E+01	**3E-05**	**1E-04**	1.20E-03	2.30E-05	**3E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	7.40E-01	Y	2.50E-02	9.26E-02	1.00E+03	**3E-05**	**9E-05**	9.97E-03	2.50E-06	**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	3.10E+00	Y	1.05E-01	3.88E-01	1.00E+02	**1E-03**	**4E-03**	4.18E-02	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	5.10E-01	Y	1.73E-02	6.38E-02	4.00E+01	**4E-04**	**2E-03**	6.87E-03	2.60E-07	**2E-09**
TRICHLOROETHENE	79-01-6	3.40E-02	Y	1.15E-03	4.25E-03	2.00E+00	**6E-04**	**2E-03**	M	4.10E-06	M **2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0064H**	**Total Inhalation**	**6E-03**	**2E-02**	**3E-07**
		Based on NDs only	**3E-03**	**1E-02**	**9E-08**
		Based on Detects only	**3E-03**	**1E-02**	**2E-07**
		Site-related only	**1E-03**	**5E-03**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0064H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	3.40E-02	1.10E-04	6.57E-05	6.38E-04	2.13E-04	1.0E-06	kidney	1E-10	7E-11	6E-10	2E-10	**1E-09**
TRICHLOROETHENE	79-01-6	3.40E-02	3.29E-05		4.25E-04		3.1E-06	NHL+liver	1E-10		1E-09		**1E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0065H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	2.15E-01	N	7.27E-03	2.69E-02	2.00E+00	**4E-03**	**1E-02**	2.90E-03	3.00E-05	**9E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	3.55E-01	N	1.20E-02	4.44E-02	3.00E+01	**4E-04**	**1E-03**	4.78E-03	5.00E-06	**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	7.00E-02	Y	2.37E-03	8.76E-03	7.00E+00	**3E-04**	**1E-03**	9.43E-04	2.60E-05	**2E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	7.60E-01	Y	2.57E-02	9.51E-02	3.00E+01	**9E-04**	**3E-03**	1.02E-02	7.80E-06	**8E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	1.39E-02	5.13E-02	1.00E+02	**1E-04**	**5E-04**	5.53E-03	6.00E-06	**3E-08**
CHLOROFORM	67-66-3	9.50E-02	N	3.21E-03	1.19E-02	9.77E+01	**3E-05**	**1E-04**	1.28E-03	2.30E-05	**3E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	2.70E-01	Y	9.14E-03	3.38E-02	1.00E+03	**9E-06**	**3E-05**	3.64E-03	2.50E-06	**9E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	1.00E+00	Y	3.38E-02	1.25E-01	1.00E+02	**3E-04**	**1E-03**	1.35E-02	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	8.30E-02	Y	2.81E-03	1.04E-02	4.00E+01	**7E-05**	**3E-04**	1.12E-03	2.60E-07	**3E-10**
TRICHLOROETHENE	79-01-6	1.05E-01	N	3.55E-03	1.31E-02	2.00E+00	**2E-03**	**7E-03**	M	4.10E-06	M **8E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0065H**	**Total Inhalation**	**8E-03**	**3E-02**	**3E-07**
		Based on NDs only	**6E-03**	**2E-02**	**1E-07**
		Based on Detects only	**2E-03**	**6E-03**	**1E-07**
		Site-related only	**2E-03**	**8E-03**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0065H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.05E-01	3.38E-04	2.03E-04	1.97E-03	6.57E-04	1.0E-06	kidney	3E-10	2E-10	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.05E-01	1.02E-04		1.31E-03		3.1E-06	NHL+liver	3E-10		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0066H**

Pathway:
Inhalation of Outdoor Air

			CTE child	CTE adult			CTE lifetime		
		TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02		

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.95E-01	N	6.60E-03	2.44E-02	2.00E+00	**3E-03**	**1E-02**	2.63E-03	3.00E-05		**8E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.15E-01	N	1.07E-02	3.94E-02	3.00E+01	**4E-04**	**1E-03**	4.25E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.30E-01	Y	4.40E-03	1.63E-02	7.00E+00	**6E-04**	**2E-03**	1.75E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	6.80E-01	Y	2.30E-02	8.51E-02	3.00E+01	**8E-04**	**3E-03**	9.16E-03	7.80E-06		**7E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	1.45E-02	5.38E-02	1.00E+02	**1E-04**	**5E-04**	5.80E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.10E-01	Y	3.72E-03	1.38E-02	9.77E+01	**4E-05**	**1E-04**	1.48E-03	2.30E-05		**3E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	3.40E+00	Y	1.15E-01	4.25E-01	1.00E+03	**1E-04**	**4E-04**	4.58E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	8.00E+00	Y	2.71E-01	1.00E+00	1.00E+02	**3E-03**	**1E-02**	1.08E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	9.90E-02	Y	3.35E-03	1.24E-02	4.00E+01	**8E-05**	**3E-04**	1.33E-03	2.60E-07		**3E-10**
TRICHLOROETHENE	79-01-6	9.50E-02	N	3.21E-03	1.19E-02	2.00E+00	**2E-03**	**6E-03**	M	4.10E-06	M	**7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0066H**	**Total Inhalation**	**1E-02**	**4E-02**	**4E-07**
		Based on NDs only	**5E-03**	**2E-02**	**1E-07**
		Based on Detects only	**4E-03**	**2E-02**	**3E-07**
		Site-related only	**2E-03**	**8E-03**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0066H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	3.06E-04	1.84E-04	1.78E-03	5.94E-04	1.0E-06	kidney	3E-10	2E-10	2E-09	6E-10	**3E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	9.18E-05		1.19E-03		3.1E-06	NHL+liver	3E-10		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0071H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.30E-01	N	7.78E-03	2.88E-02	2.00E+00	**4E-03**	**1E-02**	3.10E-03	3.00E-05		**9E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.70E-01	N	1.25E-02	4.63E-02	3.00E+01	**4E-04**	**2E-03**	4.99E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	5.60E-02	Y	1.89E-03	7.01E-03	7.00E+00	**3E-04**	**1E-03**	7.55E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.00E-01	Y	1.69E-02	6.26E-02	3.00E+01	**6E-04**	**2E-03**	6.74E-03	7.80E-06		**5E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	1.45E-02	5.38E-02	1.00E+02	**1E-04**	**5E-04**	5.80E-03	6.00E-06		**3E-08**
CHLOROFORM	67-66-3	1.10E-01	Y	3.72E-03	1.38E-02	9.77E+01	**4E-05**	**1E-04**	1.48E-03	2.30E-05		**3E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.10E-01	Y	3.72E-03	1.38E-02	1.00E+03	**4E-06**	**1E-05**	1.48E-03	2.50E-06		**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	3.90E-01	Y	1.32E-02	4.88E-02	1.00E+02	**1E-04**	**5E-04**	5.26E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.70E-01	Y	5.75E-03	2.13E-02	4.00E+01	**1E-04**	**5E-04**	2.29E-03	2.60E-07		**6E-10**
TRICHLOROETHENE	79-01-6	1.10E-01	N	3.72E-03	1.38E-02	2.00E+00	**2E-03**	**7E-03**	M	4.10E-06	M	**8E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0071H**	**Total Inhalation**	**7E-03**	**3E-02**	**3E-07**
		Based on NDs only	**6E-03**	**2E-02**	**1E-07**
		Based on Detects only	**1E-03**	**5E-03**	**1E-07**
		Site-related only	**2E-03**	**9E-03**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0071H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.10E-01	3.54E-04	2.13E-04	2.06E-03	6.88E-04	1.0E-06	kidney	4E-10	2E-10	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.10E-01	1.06E-04		1.38E-03		3.1E-06	NHL+liver	3E-10		4E-09		**5E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0076H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	2.00E-01	N	6.77E-03	2.50E-02	2.00E+00	**3E-03**	**1E-02**	2.70E-03	3.00E-05	**8E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	3.30E-01	N	1.12E-02	4.13E-02	3.00E+01	**4E-04**	**1E-03**	4.45E-03	5.00E-06	**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	6.70E-02	Y	2.27E-03	8.38E-03	7.00E+00	**3E-04**	**1E-03**	9.03E-04	2.60E-05	**2E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	5.30E-01	Y	1.79E-02	6.63E-02	3.00E+01	**6E-04**	**2E-03**	7.14E-03	7.80E-06	**6E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	1.59E-02	5.88E-02	1.00E+02	**2E-04**	**6E-04**	6.33E-03	6.00E-06	**4E-08**
CHLOROFORM	67-66-3	8.20E-02	Y	2.77E-03	1.03E-02	9.77E+01	**3E-05**	**1E-04**	1.11E-03	2.30E-05	**3E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	8.30E-02	Y	2.81E-03	1.04E-02	1.00E+03	**3E-06**	**1E-05**	1.12E-03	2.50E-06	**3E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	3.00E-01	Y	1.02E-02	3.75E-02	1.00E+02	**1E-04**	**4E-04**	4.04E-03	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	1.25E-01	N	4.23E-03	1.56E-02	4.00E+01	**1E-04**	**4E-04**	1.68E-03	2.60E-07	**4E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	N	3.38E-03	1.25E-02	2.00E+00	**2E-03**	**6E-03**	M	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0076H**	**Total Inhalation**	**7E-03**	**3E-02**	**3E-07**
		Based on NDs only	**6E-03**	**2E-02**	**1E-07**
		Based on Detects only	**1E-03**	**4E-03**	**1E-07**
		Site-related only	**2E-03**	**8E-03**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0076H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.00E-01	3.22E-04	1.93E-04	1.88E-03	6.26E-04	1.0E-06	kidney	3E-10	2E-10	2E-09	6E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	9.67E-05		1.25E-03		3.1E-06	NHL+liver	3E-10		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0091H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime				
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02				
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.05E-01	N	6.94E-03	2.56E-02	2.00E+00	**3E-03**	**1E-02**	2.76E-03	3.00E-05		**8E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	4.40E-01	Y	1.49E-02	5.50E-02	3.00E+01	**5E-04**	**2E-03**	5.93E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	4.00E-02	Y	1.35E-03	5.00E-03	7.00E+00	**2E-04**	**7E-04**	5.39E-04	2.60E-05		**1E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	6.80E-01	Y	2.30E-02	8.51E-02	3.00E+01	**8E-04**	**3E-03**	9.16E-03	7.80E-06		**7E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	1.56E-02	5.75E-02	1.00E+02	**2E-04**	**6E-04**	6.20E-03	6.00E-06		**4E-08**
CHLOROFORM	67-66-3	3.30E-01	Y	1.12E-02	4.13E-02	9.77E+01	**1E-04**	**4E-04**	4.45E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.10E-01	Y	7.11E-03	2.63E-02	1.00E+03	**7E-06**	**3E-05**	2.83E-03	2.50E-06		**7E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	8.00E-01	Y	2.71E-02	1.00E-01	1.00E+02	**3E-04**	**1E-03**	1.08E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.90E-01	Y	6.43E-03	2.38E-02	4.00E+01	**2E-04**	**6E-04**	2.56E-03	2.60E-07		**7E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	N	3.38E-03	1.25E-02	2.00E+00	**2E-03**	**6E-03**	M	4.10E-06	M	**7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0091H**	**Total Inhalation**	**7E-03**	**3E-02**	**4E-07**
		Based on NDs only	**5E-03**	**2E-02**	**9E-08**
		Based on Detects only	**2E-03**	**8E-03**	**3E-07**
		Site-related only	**2E-03**	**9E-03**	**4E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0091H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.00E-01	3.22E-04	1.93E-04	1.88E-03	6.26E-04	1.0E-06	kidney	3E-10	2E-10	2E-09	6E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	9.67E-05		1.25E-03		3.1E-06	NHL+liver	3E-10		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0098H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.10E-01	N	7.11E-03	2.63E-02	2.00E+00	**4E-03**	**1E-02**	2.83E-03	3.00E-05		**8E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.45E-01	N	1.17E-02	4.32E-02	3.00E+01	**4E-04**	**1E-03**	4.65E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	4.74E-03	1.75E-02	7.00E+00	**7E-04**	**3E-03**	1.89E-03	2.60E-05		**5E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	7.60E-01	Y	2.57E-02	9.51E-02	3.00E+01	**9E-04**	**3E-03**	1.02E-02	7.80E-06		**8E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	1.52E-02	5.63E-02	1.00E+02	**2E-04**	**6E-04**	6.06E-03	6.00E-06		**4E-08**
CHLOROFORM	67-66-3	1.30E-01	Y	4.40E-03	1.63E-02	9.77E+01	**5E-05**	**2E-04**	1.75E-03	2.30E-05		**4E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	3.40E+00	Y	1.15E-01	4.25E-01	1.00E+03	**1E-04**	**4E-04**	4.58E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	7.90E+00	Y	2.67E-01	9.88E-01	1.00E+02	**3E-03**	**1E-02**	1.06E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.30E-01	Y	4.40E-03	1.63E-02	4.00E+01	**1E-04**	**4E-04**	1.75E-03	2.60E-07		**5E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	N	3.38E-03	1.25E-02	2.00E+00	**2E-03**	**6E-03**	M	4.10E-06	M	**7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0098H**	**Total Inhalation**	**1E-02**	**4E-02**	**4E-07**
		Based on NDs only	**6E-03**	**2E-02**	**1E-07**
		Based on Detects only	**5E-03**	**2E-02**	**3E-07**
		Site-related only	**2E-03**	**8E-03**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0098H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	3.22E-04	1.93E-04	1.88E-03	6.26E-04	1.0E-06	kidney	3E-10	2E-10	2E-09	6E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	9.67E-05		1.25E-03		3.1E-06	NHL+liver	3E-10		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0102H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	1.85E-01	N	6.26E-03	2.31E-02	2.00E+00	**3E-03**	**1E-02**	2.49E-03	3.00E-05	**7E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	3.00E-01	N	1.02E-02	3.75E-02	3.00E+01	**3E-04**	**1E-03**	4.04E-03	5.00E-06	**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	7.00E-02	N	2.37E-03	8.76E-03	7.00E+00	**3E-04**	**1E-03**	9.43E-04	2.60E-05	**2E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	3.60E-01	Y	1.22E-02	4.50E-02	3.00E+01	**4E-04**	**2E-03**	4.85E-03	7.80E-06	**4E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	1.52E-02	5.63E-02	1.00E+02	**2E-04**	**6E-04**	6.06E-03	6.00E-06	**4E-08**
CHLOROFORM	67-66-3	3.30E-01	Y	1.12E-02	4.13E-02	9.77E+01	**1E-04**	**4E-04**	4.45E-03	2.30E-05	**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	7.00E-02	N	2.37E-03	8.76E-03	1.00E+03	**2E-06**	**9E-06**	9.43E-04	2.50E-06	**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	3.50E-01	Y	1.18E-02	4.38E-02	1.00E+02	**1E-04**	**4E-04**	4.72E-03	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	1.15E-01	N	3.89E-03	1.44E-02	4.00E+01	**1E-04**	**4E-04**	1.55E-03	2.60E-07	**4E-10**
TRICHLOROETHENE	79-01-6	9.00E-02	N	3.05E-03	1.13E-02	2.00E+00	**2E-03**	**6E-03**	M	4.10E-06	M **6E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0102H**	**Total Inhalation**	**6E-03**	**2E-02**	**3E-07**
		Based on NDs only	**5E-03**	**2E-02**	**1E-07**
		Based on Detects only	**8E-04**	**3E-03**	**2E-07**
		Site-related only	**2E-03**	**7E-03**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0102H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	9.00E-02	2.90E-04	1.74E-04	1.69E-03	5.63E-04	1.0E-06	kidney	3E-10	2E-10	2E-09	6E-10	**3E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	8.70E-05		1.13E-03		3.1E-06	NHL+liver	3E-10		3E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0118H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	2.10E-01	N	7.11E-03	2.63E-02	2.00E+00	**4E-03**	**1E-02**	2.83E-03	3.00E-05	**8E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	3.45E-01	N	1.17E-02	4.32E-02	3.00E+01	**4E-04**	**1E-03**	4.65E-03	5.00E-06	**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	7.50E-02	N	2.54E-03	9.38E-03	7.00E+00	**4E-04**	**1E-03**	1.01E-03	2.60E-05	**3E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	5.30E-01	Y	1.79E-02	6.63E-02	3.00E+01	**6E-04**	**2E-03**	7.14E-03	7.80E-06	**6E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	1.49E-02	5.50E-02	1.00E+02	**1E-04**	**6E-04**	5.93E-03	6.00E-06	**4E-08**
CHLOROFORM	67-66-3	9.40E-02	Y	3.18E-03	1.18E-02	9.77E+01	**3E-05**	**1E-04**	1.27E-03	2.30E-05	**3E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	1.20E-01	Y	4.06E-03	1.50E-02	1.00E+03	**4E-06**	**2E-05**	1.62E-03	2.50E-06	**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	4.50E-01	Y	1.52E-02	5.63E-02	1.00E+02	**2E-04**	**6E-04**	6.06E-03	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	1.40E-01	Y	4.74E-03	1.75E-02	4.00E+01	**1E-04**	**4E-04**	1.89E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	N	3.38E-03	1.25E-02	2.00E+00	**2E-03**	**6E-03**	M	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0118H**	**Total Inhalation**	**7E-03**	**3E-02**	**3E-07**
		Based on NDs only	**6E-03**	**2E-02**	**1E-07**
		Based on Detects only	**1E-03**	**4E-03**	**1E-07**
		Site-related only	**2E-03**	**8E-03**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0118H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	3.22E-04	1.93E-04	1.88E-03	6.26E-04	1.0E-06	kidney	3E-10	2E-10	2E-09	6E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	9.67E-05		1.25E-03		3.1E-06	NHL+liver	3E-10		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0121H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	1.90E-01	N	6.43E-03	2.38E-02	2.00E+00	**3E-03**	**1E-02**	2.56E-03	3.00E-05	**8E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	3.15E-01	N	1.07E-02	3.94E-02	3.00E+01	**4E-04**	**1E-03**	4.25E-03	5.00E-06	**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	1.50E-01	Y	5.08E-03	1.88E-02	7.00E+00	**7E-04**	**3E-03**	2.02E-03	2.60E-05	**5E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	8.50E-01	Y	2.88E-02	1.06E-01	3.00E+01	**1E-03**	**4E-03**	1.15E-02	7.80E-06	**9E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	3.60E-01	Y	1.22E-02	4.50E-02	1.00E+02	**1E-04**	**5E-04**	4.85E-03	6.00E-06	**3E-08**
CHLOROFORM	67-66-3	1.20E-01	Y	4.06E-03	1.50E-02	9.77E+01	**4E-05**	**2E-04**	1.62E-03	2.30E-05	**4E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	2.40E+00	Y	8.12E-02	3.00E-01	1.00E+03	**8E-05**	**3E-04**	3.23E-02	2.50E-06	**8E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	5.10E+00	Y	1.73E-01	6.38E-01	1.00E+02	**2E-03**	**6E-03**	6.87E-02	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	1.40E-01	Y	4.74E-03	1.75E-02	4.00E+01	**1E-04**	**4E-04**	1.89E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	9.50E-02	N	3.21E-03	1.19E-02	2.00E+00	**2E-03**	**6E-03**	M	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0121H**	**Total Inhalation**	**9E-03**	**3E-02**	**4E-07**
		Based on NDs only	**5E-03**	**2E-02**	**1E-07**
		Based on Detects only	**4E-03**	**1E-02**	**3E-07**
		Site-related only	**2E-03**	**8E-03**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0121H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	3.06E-04	1.84E-04	1.78E-03	5.94E-04	1.0E-06	kidney	3E-10	2E-10	2E-09	6E-10	**3E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	9.18E-05		1.19E-03		3.1E-06	NHL+liver	3E-10		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0122H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	2.00E-01	N	6.77E-03	2.50E-02	2.00E+00	**3E-03**	**1E-02**	2.70E-03	3.00E-05	**8E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	3.30E-01	N	1.12E-02	4.13E-02	3.00E+01	**4E-04**	**1E-03**	4.45E-03	5.00E-06	**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	6.20E-02	Y	2.10E-03	7.76E-03	7.00E+00	**3E-04**	**1E-03**	8.36E-04	2.60E-05	**2E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	7.00E-01	Y	2.37E-02	8.76E-02	3.00E+01	**8E-04**	**3E-03**	9.43E-03	7.80E-06	**7E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	1.52E-02	5.63E-02	1.00E+02	**2E-04**	**6E-04**	6.06E-03	6.00E-06	**4E-08**
CHLOROFORM	67-66-3	9.80E-02	Y	3.32E-03	1.23E-02	9.77E+01	**3E-05**	**1E-04**	1.32E-03	2.30E-05	**3E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	2.50E+00	Y	8.46E-02	3.13E-01	1.00E+03	**8E-05**	**3E-04**	3.37E-02	2.50E-06	**8E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	7.20E+00	Y	2.44E-01	9.01E-01	1.00E+02	**2E-03**	**9E-03**	9.70E-02	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	1.80E-01	Y	6.09E-03	2.25E-02	4.00E+01	**2E-04**	**6E-04**	2.43E-03	2.60E-07	**6E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	N	3.38E-03	1.25E-02	2.00E+00	**2E-03**	**6E-03**	M	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0122H**	**Total Inhalation**	**9E-03**	**3E-02**	**4E-07**
		Based on NDs only	**5E-03**	**2E-02**	**1E-07**
		Based on Detects only	**4E-03**	**1E-02**	**2E-07**
		Site-related only	**2E-03**	**8E-03**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0122H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	3.22E-04	1.93E-04	1.88E-03	6.26E-04	1.0E-06	kidney	3E-10	2E-10	2E-09	6E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	9.67E-05		1.25E-03		3.1E-06	NHL+liver	3E-10		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0135H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	1.90E-01	N	6.43E-03	2.38E-02	2.00E+00	**3E-03**	**1E-02**	2.56E-03	3.00E-05	**8E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	3.10E-01	N	1.05E-02	3.88E-02	3.00E+01	**3E-04**	**1E-03**	4.18E-03	5.00E-06	**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	7.00E-02	N	2.37E-03	8.76E-03	7.00E+00	**3E-04**	**1E-03**	9.43E-04	2.60E-05	**2E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	5.80E-01	Y	1.96E-02	7.26E-02	3.00E+01	**7E-04**	**2E-03**	7.82E-03	7.80E-06	**6E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	1.56E-02	5.75E-02	1.00E+02	**2E-04**	**6E-04**	6.20E-03	6.00E-06	**4E-08**
CHLOROFORM	67-66-3	1.10E-01	Y	3.72E-03	1.38E-02	9.77E+01	**4E-05**	**1E-04**	1.48E-03	2.30E-05	**3E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	1.60E-01	Y	5.41E-03	2.00E-02	1.00E+03	**5E-06**	**2E-05**	2.16E-03	2.50E-06	**5E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	5.20E-01	Y	1.76E-02	6.51E-02	1.00E+02	**2E-04**	**7E-04**	7.01E-03	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	1.50E-01	Y	5.08E-03	1.88E-02	4.00E+01	**1E-04**	**5E-04**	2.02E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	9.00E-02	N	3.05E-03	1.13E-02	2.00E+00	**2E-03**	**6E-03**	M	4.10E-06	M **6E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0135H**	**Total Inhalation**	**7E-03**	**2E-02**	**3E-07**
		Based on NDs only	**5E-03**	**2E-02**	**1E-07**
		Based on Detects only	**1E-03**	**4E-03**	**1E-07**
		Site-related only	**2E-03**	**7E-03**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0135H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.00E-02	2.90E-04	1.74E-04	1.69E-03	5.63E-04	1.0E-06	kidney	3E-10	2E-10	2E-09	6E-10	**3E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	8.70E-05		1.13E-03		3.1E-06	NHL+liver	3E-10		3E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0139H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	2.30E-01	N	7.78E-03	2.88E-02	2.00E+00	**4E-03**	**1E-02**	3.10E-03	3.00E-05	**9E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	3.70E-01	N	1.25E-02	4.63E-02	3.00E+01	**4E-04**	**2E-03**	4.99E-03	5.00E-06	**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	6.10E-02	Y	2.06E-03	7.63E-03	7.00E+00	**3E-04**	**1E-03**	8.22E-04	2.60E-05	**2E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	5.10E-01	Y	1.73E-02	6.38E-02	3.00E+01	**6E-04**	**2E-03**	6.87E-03	7.80E-06	**5E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	1.35E-02	5.00E-02	1.00E+02	**1E-04**	**5E-04**	5.39E-03	6.00E-06	**3E-08**
CHLOROFORM	67-66-3	7.70E-02	Y	2.61E-03	9.63E-03	9.77E+01	**3E-05**	**1E-04**	1.04E-03	2.30E-05	**2E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	8.00E-02	Y	2.71E-03	1.00E-02	1.00E+03	**3E-06**	**1E-05**	1.08E-03	2.50E-06	**3E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	2.90E-01	Y	9.81E-03	3.63E-02	1.00E+02	**1E-04**	**4E-04**	3.91E-03	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	1.40E-01	N	4.74E-03	1.75E-02	4.00E+01	**1E-04**	**4E-04**	1.89E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	1.10E-01	N	3.72E-03	1.38E-02	2.00E+00	**2E-03**	**7E-03**	M	4.10E-06	M **8E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0139H**	**Total Inhalation**	**7E-03**	**3E-02**	**3E-07**
		Based on NDs only	**6E-03**	**2E-02**	**1E-07**
		Based on Detects only	**1E-03**	**4E-03**	**1E-07**
		Site-related only	**2E-03**	**9E-03**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0139H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.10E-01	3.54E-04	2.13E-04	2.06E-03	6.88E-04	1.0E-06	kidney	4E-10	2E-10	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.10E-01	1.06E-04		1.38E-03		3.1E-06	NHL+liver	3E-10		4E-09		**5E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0146H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	1.95E-01	N	6.60E-03	2.44E-02	2.00E+00	**3E-03**	**1E-02**	2.63E-03	3.00E-05	**8E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	1.80E-01	Y	6.09E-03	2.25E-02	3.00E+01	**2E-04**	**8E-04**	2.43E-03	5.00E-06	**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	5.50E-02	Y	1.86E-03	6.88E-03	7.00E+00	**3E-04**	**1E-03**	7.41E-04	2.60E-05	**2E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	4.20E-01	Y	1.42E-02	5.25E-02	3.00E+01	**5E-04**	**2E-03**	5.66E-03	7.80E-06	**4E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	1.42E-02	5.25E-02	1.00E+02	**1E-04**	**5E-04**	5.66E-03	6.00E-06	**3E-08**
CHLOROFORM	67-66-3	7.60E-02	Y	2.57E-03	9.51E-03	9.77E+01	**3E-05**	**1E-04**	1.02E-03	2.30E-05	**2E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	7.10E-02	Y	2.40E-03	8.88E-03	1.00E+03	**2E-06**	**9E-06**	9.57E-04	2.50E-06	**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	2.40E-01	Y	8.12E-03	3.00E-02	1.00E+02	**8E-05**	**3E-04**	3.23E-03	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	1.20E-01	N	4.06E-03	1.50E-02	4.00E+01	**1E-04**	**4E-04**	1.62E-03	2.60E-07	**4E-10**
TRICHLOROETHENE	79-01-6	9.50E-02	N	3.21E-03	1.19E-02	2.00E+00	**2E-03**	**6E-03**	M	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0146H**	**Total Inhalation**	**6E-03**	**2E-02**	**2E-07**
		Based on NDs only	**5E-03**	**2E-02**	**9E-08**
		Based on Detects only	**1E-03**	**4E-03**	**1E-07**
		Site-related only	**2E-03**	**7E-03**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0146H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	3.06E-04	1.84E-04	1.78E-03	5.94E-04	1.0E-06	kidney	3E-10	2E-10	2E-09	6E-10	**3E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	9.18E-05		1.19E-03		3.1E-06	NHL+liver	3E-10		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0148H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	2.05E-01	N	6.94E-03	2.56E-02	2.00E+00	**3E-03**	**1E-02**	2.76E-03	3.00E-05	**8E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	2.60E-01	Y	8.80E-03	3.25E-02	3.00E+01	**3E-04**	**1E-03**	3.50E-03	5.00E-06	**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	4.74E-03	1.75E-02	7.00E+00	**7E-04**	**3E-03**	1.89E-03	2.60E-05	**5E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	7.20E-01	Y	2.44E-02	9.01E-02	3.00E+01	**8E-04**	**3E-03**	9.70E-03	7.80E-06	**8E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	1.45E-02	5.38E-02	1.00E+02	**1E-04**	**5E-04**	5.80E-03	6.00E-06	**3E-08**
CHLOROFORM	67-66-3	1.30E-01	Y	4.40E-03	1.63E-02	9.77E+01	**5E-05**	**2E-04**	1.75E-03	2.30E-05	**4E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	3.80E+00	Y	1.29E-01	4.75E-01	1.00E+03	**1E-04**	**5E-04**	5.12E-02	2.50E-06	**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	9.00E+00	Y	3.05E-01	1.13E+00	1.00E+02	**3E-03**	**1E-02**	1.21E-01	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	1.50E-01	Y	5.08E-03	1.88E-02	4.00E+01	**1E-04**	**5E-04**	2.02E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	N	3.38E-03	1.25E-02	2.00E+00	**2E-03**	**6E-03**	M	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0148H**	**Total Inhalation**	**1E-02**	**4E-02**	**4E-07**
		Based on NDs only	**5E-03**	**2E-02**	**9E-08**
		Based on Detects only	**5E-03**	**2E-02**	**3E-07**
		Site-related only	**2E-03**	**8E-03**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0148H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	3.22E-04	1.93E-04	1.88E-03	6.26E-04	1.0E-06	kidney	3E-10	2E-10	2E-09	6E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	9.67E-05		1.25E-03		3.1E-06	NHL+liver	3E-10		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0153H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.05E-01	N	6.94E-03	2.56E-02	2.00E+00	**3E-03**	**1E-02**	2.76E-03	3.00E-05		**8E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	1.10E-01	Y	3.72E-03	1.38E-02	3.00E+01	**1E-04**	**5E-04**	1.48E-03	5.00E-06		**7E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	9.60E-02	Y	3.25E-03	1.20E-02	7.00E+00	**5E-04**	**2E-03**	1.29E-03	2.60E-05		**3E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	7.40E-01	Y	2.50E-02	9.26E-02	3.00E+01	**8E-04**	**3E-03**	9.97E-03	7.80E-06		**8E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	1.49E-02	5.50E-02	1.00E+02	**1E-04**	**6E-04**	5.93E-03	6.00E-06		**4E-08**
CHLOROFORM	67-66-3	1.20E-01	Y	4.06E-03	1.50E-02	9.77E+01	**4E-05**	**2E-04**	1.62E-03	2.30E-05		**4E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	4.70E+00	Y	1.59E-01	5.88E-01	1.00E+03	**2E-04**	**6E-04**	6.33E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.20E+01	Y	4.06E-01	1.50E+00	1.00E+02	**4E-03**	**2E-02**	1.62E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	2.00E-01	Y	6.77E-03	2.50E-02	4.00E+01	**2E-04**	**6E-04**	2.70E-03	2.60E-07		**7E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	N	3.38E-03	1.25E-02	2.00E+00	**2E-03**	**6E-03**	M	4.10E-06	M	**7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0153H**	**Total Inhalation**	**1E-02**	**4E-02**	**4E-07**
		Based on NDs only	**5E-03**	**2E-02**	**9E-08**
		Based on Detects only	**6E-03**	**2E-02**	**4E-07**
		Site-related only	**2E-03**	**7E-03**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0153H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	3.22E-04	1.93E-04	1.88E-03	6.26E-04	1.0E-06	kidney	3E-10	2E-10	2E-09	6E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	9.67E-05		1.25E-03		3.1E-06	NHL+liver	3E-10		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0162H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	1.90E-01	N	6.43E-03	2.38E-02	2.00E+00	**3E-03**	**1E-02**	2.56E-03	3.00E-05	**8E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	3.10E-01	N	1.05E-02	3.88E-02	3.00E+01	**3E-04**	**1E-03**	4.18E-03	5.00E-06	**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	6.80E-02	Y	2.30E-03	8.51E-03	7.00E+00	**3E-04**	**1E-03**	9.16E-04	2.60E-05	**2E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	5.10E-01	Y	1.73E-02	6.38E-02	3.00E+01	**6E-04**	**2E-03**	6.87E-03	7.80E-06	**5E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	1.45E-02	5.38E-02	1.00E+02	**1E-04**	**5E-04**	5.80E-03	6.00E-06	**3E-08**
CHLOROFORM	67-66-3	9.80E-02	Y	3.32E-03	1.23E-02	9.77E+01	**3E-05**	**1E-04**	1.32E-03	2.30E-05	**3E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	1.20E-01	Y	4.06E-03	1.50E-02	1.00E+03	**4E-06**	**2E-05**	1.62E-03	2.50E-06	**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	4.00E-01	Y	1.35E-02	5.00E-02	1.00E+02	**1E-04**	**5E-04**	5.39E-03	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	2.70E-01	Y	9.14E-03	3.38E-02	4.00E+01	**2E-04**	**8E-04**	3.64E-03	2.60E-07	**9E-10**
TRICHLOROETHENE	79-01-6	9.00E-02	N	3.05E-03	1.13E-02	2.00E+00	**2E-03**	**6E-03**	M	4.10E-06	M **6E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0162H**	**Total Inhalation**	**7E-03**	**2E-02**	**3E-07**
		Based on NDs only	**5E-03**	**2E-02**	**1E-07**
		Based on Detects only	**1E-03**	**5E-03**	**1E-07**
		Site-related only	**2E-03**	**8E-03**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0162H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.00E-02	2.90E-04	1.74E-04	1.69E-03	5.63E-04	1.0E-06	kidney	3E-10	2E-10	2E-09	6E-10	**3E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	8.70E-05		1.13E-03		3.1E-06	NHL+liver	3E-10		3E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0173H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	2.00E-01	N	6.77E-03	2.50E-02	2.00E+00	**3E-03**	**1E-02**	2.70E-03	3.00E-05	**8E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	3.30E-01	N	1.12E-02	4.13E-02	3.00E+01	**4E-04**	**1E-03**	4.45E-03	5.00E-06	**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	5.40E-02	Y	1.83E-03	6.76E-03	7.00E+00	**3E-04**	**1E-03**	7.28E-04	2.60E-05	**2E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	5.10E-01	Y	1.73E-02	6.38E-02	3.00E+01	**6E-04**	**2E-03**	6.87E-03	7.80E-06	**5E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	1.49E-02	5.50E-02	1.00E+02	**1E-04**	**6E-04**	5.93E-03	6.00E-06	**4E-08**
CHLOROFORM	67-66-3	7.20E-02	Y	2.44E-03	9.01E-03	9.77E+01	**2E-05**	**9E-05**	9.70E-04	2.30E-05	**2E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	7.10E-02	Y	2.40E-03	8.88E-03	1.00E+03	**2E-06**	**9E-06**	9.57E-04	2.50E-06	**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	2.50E-01	Y	8.46E-03	3.13E-02	1.00E+02	**8E-05**	**3E-04**	3.37E-03	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	1.25E-01	N	4.23E-03	1.56E-02	4.00E+01	**1E-04**	**4E-04**	1.68E-03	2.60E-07	**4E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	N	3.38E-03	1.25E-02	2.00E+00	**2E-03**	**6E-03**	M	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0173H**	**Total Inhalation**	**7E-03**	**2E-02**	**2E-07**
		Based on NDs only	**6E-03**	**2E-02**	**1E-07**
		Based on Detects only	**1E-03**	**4E-03**	**1E-07**
		Site-related only	**2E-03**	**8E-03**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0173H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	3.22E-04	1.93E-04	1.88E-03	6.26E-04	1.0E-06	kidney	3E-10	2E-10	2E-09	6E-10	**3E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	9.67E-05		1.25E-03		3.1E-06	NHL+liver	3E-10		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0174H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	1.95E-01	N	6.60E-03	2.44E-02	2.00E+00	**3E-03**	**1E-02**	2.63E-03	3.00E-05	**8E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	3.15E-01	N	1.07E-02	3.94E-02	3.00E+01	**4E-04**	**1E-03**	4.25E-03	5.00E-06	**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	5.50E-02	Y	1.86E-03	6.88E-03	7.00E+00	**3E-04**	**1E-03**	7.41E-04	2.60E-05	**2E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	4.10E-01	Y	1.39E-02	5.13E-02	3.00E+01	**5E-04**	**2E-03**	5.53E-03	7.80E-06	**4E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	1.49E-02	5.50E-02	1.00E+02	**1E-04**	**6E-04**	5.93E-03	6.00E-06	**4E-08**
CHLOROFORM	67-66-3	7.00E-02	Y	2.37E-03	8.76E-03	9.77E+01	**2E-05**	**9E-05**	9.43E-04	2.30E-05	**2E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	6.70E-02	Y	2.27E-03	8.38E-03	1.00E+03	**2E-06**	**8E-06**	9.03E-04	2.50E-06	**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	2.30E-01	Y	7.78E-03	2.88E-02	1.00E+02	**8E-05**	**3E-04**	3.10E-03	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	1.20E-01	N	4.06E-03	1.50E-02	4.00E+01	**1E-04**	**4E-04**	1.62E-03	2.60E-07	**4E-10**
TRICHLOROETHENE	79-01-6	9.50E-02	N	3.21E-03	1.19E-02	2.00E+00	**2E-03**	**6E-03**	M	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0174H**	**Total Inhalation**	**6E-03**	**2E-02**	**2E-07**
		Based on NDs only	**5E-03**	**2E-02**	**1E-07**
		Based on Detects only	**1E-03**	**4E-03**	**1E-07**
		Site-related only	**2E-03**	**8E-03**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0174H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	3.06E-04	1.84E-04	1.78E-03	5.94E-04	1.0E-06	kidney	3E-10	2E-10	2E-09	6E-10	**3E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	9.18E-05		1.19E-03		3.1E-06	NHL+liver	3E-10		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0302H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	1.65E-01	N	5.58E-03	2.06E-02	2.00E+00	**3E-03**	**1E-02**	2.22E-03	3.00E-05	**7E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	2.70E-01	N	9.14E-03	3.38E-02	3.00E+01	**3E-04**	**1E-03**	3.64E-03	5.00E-06	**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	9.70E-02	Y	3.28E-03	1.21E-02	7.00E+00	**5E-04**	**2E-03**	1.31E-03	2.60E-05	**3E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	5.40E-01	Y	1.83E-02	6.76E-02	3.00E+01	**6E-04**	**2E-03**	7.28E-03	7.80E-06	**6E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	3.20E-01	Y	1.08E-02	4.00E-02	1.00E+02	**1E-04**	**4E-04**	4.31E-03	6.00E-06	**3E-08**
CHLOROFORM	67-66-3	8.20E-02	Y	2.77E-03	1.03E-02	9.77E+01	**3E-05**	**1E-04**	1.11E-03	2.30E-05	**3E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	6.40E-01	Y	2.17E-02	8.01E-02	1.00E+03	**2E-05**	**8E-05**	8.63E-03	2.50E-06	**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	2.90E+00	Y	9.81E-02	3.63E-01	1.00E+02	**1E-03**	**4E-03**	3.91E-02	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	3.70E-01	Y	1.25E-02	4.63E-02	4.00E+01	**3E-04**	**1E-03**	4.99E-03	2.60E-07	**1E-09**
TRICHLOROETHENE	79-01-6	8.00E-02	N	2.71E-03	1.00E-02	2.00E+00	**1E-03**	**5E-03**	M	4.10E-06	M **6E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Residential	**0302H**	**Total Inhalation**	**7E-03**	**3E-02**	**3E-07**
		Based on NDs only	**4E-03**	**2E-02**	**9E-08**
		Based on Detects only	**3E-03**	**9E-03**	**2E-07**
		Site-related only	**2E-03**	**7E-03**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0302H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	8.00E-02	2.58E-04	1.55E-04	1.50E-03	5.00E-04	1.0E-06	kidney	3E-10	2E-10	2E-09	5E-10	**2E-09**
TRICHLOROETHENE	79-01-6	8.00E-02	7.73E-05		1.00E-03		3.1E-06	NHL+liver	2E-10		3E-09		**3E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0334H**

Pathway:
Inhalation of Outdoor Air

		CTE child	CTE adult			CTE lifetime
	TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.22E+00	N	7.49E-02	2.77E-01	2.00E+00	**4E-02**	**1E-01**	2.99E-02	3.00E-05		**9E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.61E-01	N	1.22E-02	4.51E-02	3.00E+01	**4E-04**	**2E-03**	4.86E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.03E-01	Y	3.49E-03	1.29E-02	7.00E+00	**5E-04**	**2E-03**	1.39E-03	2.60E-05		**4E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	7.06E-01	Y	2.39E-02	8.83E-02	3.00E+01	**8E-04**	**3E-03**	9.51E-03	7.80E-06		**7E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.52E-01	Y	1.87E-02	6.91E-02	1.00E+02	**2E-04**	**7E-04**	7.44E-03	6.00E-06		**4E-08**
CHLOROFORM	67-66-3	4.87E-02	N	1.65E-03	6.09E-03	9.77E+01	**2E-05**	**6E-05**	6.56E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	9.84E-01	Y	3.33E-02	1.23E-01	1.00E+03	**3E-05**	**1E-04**	1.33E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	3.67E+00	Y	1.24E-01	4.59E-01	1.00E+02	**1E-03**	**5E-03**	4.95E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	3.74E-01	Y	1.27E-02	4.68E-02	4.00E+01	**3E-04**	**1E-03**	5.04E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	1.42E-01	Y	4.80E-03	1.78E-02	2.00E+00	**2E-03**	**9E-03**	M	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0334H**	**Total Inhalation**	**4E-02**	**2E-01**	**1E-06**
		Based on NDs only	**4E-02**	**1E-01**	**9E-07**
		Based on Detects only	**5E-03**	**2E-02**	**2E-07**
		Site-related only	**3E-03**	**1E-02**	**4E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0334H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.42E-01	4.58E-04	2.75E-04	2.66E-03	8.88E-04	1.0E-06	kidney	5E-10	3E-10	3E-09	9E-10	**4E-09**
TRICHLOROETHENE	79-01-6	1.42E-01	1.37E-04		1.78E-03		3.1E-06	NHL+liver	4E-10		6E-09		**6E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0381H**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	1.65E-01	N	5.58E-03	2.06E-02	2.00E+00	**3E-03**	**1E-02**	2.22E-03	3.00E-05	**7E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	1.50E-01	Y	5.08E-03	1.88E-02	3.00E+01	**2E-04**	**6E-04**	2.02E-03	5.00E-06	**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	2.61E-03	9.63E-03	7.00E+00	**4E-04**	**1E-03**	1.04E-03	2.60E-05	**3E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	4.30E-01	Y	1.45E-02	5.38E-02	3.00E+01	**5E-04**	**2E-03**	5.80E-03	7.80E-06	**5E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	3.70E-01	Y	1.25E-02	4.63E-02	1.00E+02	**1E-04**	**5E-04**	4.99E-03	6.00E-06	**3E-08**
CHLOROFORM	67-66-3	9.50E-02	Y	3.21E-03	1.19E-02	9.77E+01	**3E-05**	**1E-04**	1.28E-03	2.30E-05	**3E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	2.80E-01	Y	9.47E-03	3.50E-02	1.00E+03	**9E-06**	**4E-05**	3.77E-03	2.50E-06	**9E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	1.20E+00	Y	4.06E-02	1.50E-01	1.00E+02	**4E-04**	**2E-03**	1.62E-02	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	1.90E-01	Y	6.43E-03	2.38E-02	4.00E+01	**2E-04**	**6E-04**	2.56E-03	2.60E-07	**7E-10**
TRICHLOROETHENE	79-01-6	8.00E-02	N	2.71E-03	1.00E-02	2.00E+00	**1E-03**	**5E-03**	M	4.10E-06	M **6E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0381H**	**Total Inhalation**	**6E-03**	**2E-02**	**2E-07**
		Based on NDs only	**4E-03**	**2E-02**	**7E-08**
		Based on Detects only	**2E-03**	**7E-03**	**2E-07**
		Site-related only	**2E-03**	**6E-03**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0381H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	8.00E-02	2.58E-04	1.55E-04	1.50E-03	5.00E-04	1.0E-06	kidney	3E-10	2E-10	2E-09	5E-10	**2E-09**
TRICHLOROETHENE	79-01-6	8.00E-02	7.73E-05		1.00E-03		3.1E-06	NHL+liver	2E-10		3E-09		**3E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**B32**

Pathway:
Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	3.38E-02	1.25E-01		TWFc (unitless)	1.35E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	1.65E-01	N	5.58E-03	2.06E-02	2.00E+00	**3E-03**	**1E-02**	2.22E-03	3.00E-05	**7E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	2.70E-01	N	9.14E-03	3.38E-02	3.00E+01	**3E-04**	**1E-03**	3.64E-03	5.00E-06	**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	7.40E-02	Y	2.50E-03	9.26E-03	7.00E+00	**4E-04**	**1E-03**	9.97E-04	2.60E-05	**3E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	4.90E-01	Y	1.66E-02	6.13E-02	3.00E+01	**6E-04**	**2E-03**	6.60E-03	7.80E-06	**5E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	6.90E-01	Y	2.33E-02	8.63E-02	1.00E+02	**2E-04**	**9E-04**	9.30E-03	6.00E-06	**6E-08**
CHLOROFORM	67-66-3	9.00E-02	Y	3.05E-03	1.13E-02	9.77E+01	**3E-05**	**1E-04**	1.21E-03	2.30E-05	**3E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	7.80E-01	Y	2.64E-02	9.76E-02	1.00E+03	**3E-05**	**1E-04**	1.05E-02	2.50E-06	**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	3.60E+00	Y	1.22E-01	4.50E-01	1.00E+02	**1E-03**	**5E-03**	4.85E-02	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	4.30E-01	Y	1.45E-02	5.38E-02	4.00E+01	**4E-04**	**1E-03**	5.80E-03	2.60E-07	**2E-09**
TRICHLOROETHENE	79-01-6	8.00E-02	N	2.71E-03	1.00E-02	2.00E+00	**1E-03**	**5E-03**	M	4.10E-06	M **6E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**B32**	**Total Inhalation**	**7E-03**	**3E-02**	**3E-07**
		Based on NDs only	**4E-03**	**2E-02**	**9E-08**
		Based on Detects only	**3E-03**	**1E-02**	**2E-07**
		Site-related only	**2E-03**	**7E-03**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**B32**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	9.67E-04	1.25E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	8.00E-02	2.58E-04	1.55E-04	1.50E-03	5.00E-04	1.0E-06	kidney	3E-10	2E-10	2E-09	5E-10	**2E-09**
TRICHLOROETHENE	79-01-6	8.00E-02	7.73E-05		1.00E-03		3.1E-06	NHL+liver	2E-10		3E-09		**3E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Students**
Exposure Area:	**0045S**

Pathway:
Inhalation of Outdoor Air

		CTE primary	CTE secondary			CTE lifetime
	TWFnc (unitless)	2.05E-02	2.05E-02		TWFc (unitless)	3.82E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	7.19E-03	7.19E-03	4.00E+01	**2E-04**	**2E-04**	1.34E-03	2.60E-07		**3E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	5.14E-03	5.14E-03	2.00E+00	**3E-03**	**3E-03**	9.54E-04	4.10E-06	M	**7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Students	**0045S**	**Total Inhalation**	**3E-03**	**3E-03**	**7E-09**
		Based on NDs only	**3E-03**	**3E-03**	**7E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-03**	**3E-03**	**7E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Students**
Exposure Area:	**0045S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	2.05E-03	1.76E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.71E-03	1.03E-03	6.60E-04	2.20E-04	1.0E-06	kidney	2E-09	1E-09	7E-10	2E-10	**4E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.14E-04		4.40E-04		3.1E-06	NHL+liver	2E-09		1E-09		**3E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on CTE Exposure Parameters

Receptor:	**Students**
Exposure Area:	**365S**

Pathway:
Inhalation of Outdoor Air

		CTE primary	CTE secondary			CTE lifetime
	TWFnc (unitless)	2.05E-02	2.05E-02		TWFc (unitless)	3.82E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.95E-01	N	4.01E-03	4.01E-03	2.00E+00	**2E-03**	**2E-03**	7.44E-04	3.00E-05		**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.15E-01	N	6.47E-03	6.47E-03	3.00E+01	**2E-04**	**2E-04**	1.20E-03	5.00E-06		**6E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	7.20E-02	Y	1.48E-03	1.48E-03	7.00E+00	**2E-04**	**2E-04**	2.75E-04	2.60E-05		**7E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	4.60E-01	Y	9.45E-03	9.45E-03	3.00E+01	**3E-04**	**3E-04**	1.76E-03	7.80E-06		**1E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	7.81E-03	7.81E-03	1.00E+02	**8E-05**	**8E-05**	1.45E-03	6.00E-06		**9E-09**
CHLOROFORM	67-66-3	9.00E-02	Y	1.85E-03	1.85E-03	9.77E+01	**2E-05**	**2E-05**	3.43E-04	2.30E-05		**8E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	3.90E-01	Y	8.01E-03	8.01E-03	1.00E+03	**8E-06**	**8E-06**	1.49E-03	2.50E-06		**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.90E+00	Y	3.90E-02	3.90E-02	1.00E+02	**4E-04**	**4E-04**	7.25E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	2.10E-01	Y	4.32E-03	4.32E-03	4.00E+01	**1E-04**	**1E-04**	8.01E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	9.50E-02	N	1.95E-03	1.95E-03	2.00E+00	**1E-03**	**1E-03**	3.63E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Students	**365S**	**Total Inhalation**	**4E-03**	**4E-03**	**7E-08**
		Based on NDs only	**3E-03**	**3E-03**	**3E-08**
		Based on Detects only	**1E-03**	**1E-03**	**4E-08**
		Site-related only	**1E-03**	**1E-03**	**9E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Students**
Exposure Area:	**365S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	2.05E-03	1.76E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	9.50E-02	6.51E-04	3.90E-04	2.51E-04	8.37E-05	1.0E-06	kidney	7E-10	4E-10	3E-10	8E-11	**1E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	1.95E-04		1.67E-04		3.1E-06	NHL+liver	6E-10		5E-10		**1E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0001H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0001H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0001H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0002H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0002H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0002H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0003H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01			TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	2.05E-01	N	---	4.10E-02	2.00E+00	---	**2E-02**	1.17E-03	3.00E-05		**4E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.35E-01	N	---	6.70E-02	3.00E+01	---	**2E-03**	1.91E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	8.70E-02	Y	---	1.74E-02	7.00E+00	---	**2E-03**	4.97E-04	2.60E-05		**1E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	1.80E+00	Y	---	3.60E-01	3.00E+01	---	**1E-02**	1.03E-02	7.80E-06		**8E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	---	7.60E-02	1.00E+02	---	**8E-04**	2.17E-03	6.00E-06		**1E-08**
CHLOROFORM	67-66-3	1.60E-01	Y	---	3.20E-02	9.77E+01	---	**3E-04**	9.14E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	4.30E-01	Y	---	8.60E-02	1.00E+03	---	**9E-05**	2.46E-03	2.50E-06		**6E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.70E+00	Y	---	3.40E-01	1.00E+02	---	**3E-03**	9.71E-03	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.10E-01	Y	---	2.20E-02	4.00E+01	---	**6E-04**	6.29E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.90E-02	Y	---	5.80E-03	2.00E+00	---	**3E-03**	1.66E-04	4.10E-06	M	**8E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0003H**	**Total Inhalation**	**---**	**5E-02**	**2E-07**
		Based on NDs only	**0E+00**	**2E-02**	**4E-08**
		Based on Detects only	**#VALUE!**	**2E-02**	**1E-07**
		Site-related only	**0E+00**	**6E-03**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0003H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.90E-02	NA	NA	2.49E-04	8.29E-05	1.0E-06	kidney	---	---	2E-10	8E-11	**3E-10**
TRICHLOROETHENE	79-01-6	2.90E-02	NA		1.66E-04		3.1E-06	NHL+liver	---		5E-10		**5E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0004H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01			TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07		**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M	**7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0004H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0004H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0011H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01			TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	1.40E-01	Y	---	2.80E-02	2.00E+00	---	**1E-02**	8.00E-04	3.00E-05		**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	1.80E-01	Y	---	3.60E-02	3.00E+01	---	**1E-03**	1.03E-03	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	---	2.80E-02	7.00E+00	---	**4E-03**	8.00E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	1.10E+00	Y	---	2.20E-01	3.00E+01	---	**7E-03**	6.29E-03	7.80E-06		**5E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	---	8.40E-02	1.00E+02	---	**8E-04**	2.40E-03	6.00E-06		**1E-08**
CHLOROFORM	67-66-3	1.00E+00	Y	---	2.00E-01	9.77E+01	---	**2E-03**	5.71E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	9.80E-01	Y	---	1.96E-01	1.00E+03	---	**2E-04**	5.60E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.80E+00	Y	---	3.60E-01	1.00E+02	---	**4E-03**	1.03E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.80E-01	Y	---	1.16E-01	4.00E+01	---	**3E-03**	3.31E-03	2.60E-07		**9E-10**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	---	5.80E-02	2.00E+00	---	**3E-02**	1.66E-03	4.10E-06	M	**8E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0011H**	**Total Inhalation**	**---**	**7E-02**	**3E-07**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**#VALUE!**	**7E-02**	**3E-07**
		Site-related only	**0E+00**	**3E-02**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0011H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.90E-01	NA	NA	2.49E-03	8.29E-04	1.0E-06	kidney	---	---	2E-09	8E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.90E-01	NA		1.66E-03		3.1E-06	NHL+liver	---		5E-09		**5E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0012H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0012H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0012H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0013H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0013H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0013H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0025H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0025H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0025H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0026H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	5.53E-01	N	---	1.11E-01	2.00E+00	---	**6E-02**	3.16E-03	3.00E-05	**9E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	1.40E-01	Y	---	2.80E-02	3.00E+01	---	**9E-04**	8.00E-04	5.00E-06	**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	6.00E-02	Y	---	1.20E-02	7.00E+00	---	**2E-03**	3.43E-04	2.60E-05	**9E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	5.30E-01	Y	---	1.06E-01	3.00E+01	---	**4E-03**	3.03E-03	7.80E-06	**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	---	8.40E-02	1.00E+02	---	**8E-04**	2.40E-03	6.00E-06	**1E-08**
CHLOROFORM	67-66-3	1.10E-01	Y	---	2.20E-02	9.77E+01	---	**2E-04**	6.29E-04	2.30E-05	**1E-08**
ETHYL ACETATE	141-78-6	1.80E+00	N	---	3.60E-01	7.00E+01	---	**5E-03**	1.03E-02	-	---
ETHYLBENZENE	100-41-4	7.80E-02	Y	---	1.56E-02	1.00E+03	---	**2E-05**	4.46E-04	2.50E-06	**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	7.00E-01	Y	---	1.40E-01	1.00E+02	---	**1E-03**	4.00E-03	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	1.00E-01	Y	---	2.00E-02	4.00E+01	---	**5E-04**	5.71E-04	2.60E-07	**1E-10**
TRICHLOROETHENE	79-01-6	1.35E+00	N	---	2.70E-01	2.00E+00	---	**1E-01**	7.71E-03	4.10E-06	M **4E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0026H**	**Total Inhalation**	**---**	**2E-01**	**2E-07**
		Based on NDs only	**0E+00**	**2E-01**	**1E-07**
		Based on Detects only	**#VALUE!**	**9E-03**	**7E-08**
		Site-related only	**0E+00**	**1E-01**	**4E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0026H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.35E+00	NA	NA	1.16E-02	3.86E-03	1.0E-06	kidney	---	---	1E-08	4E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.35E+00	NA		7.71E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0027H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0027H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0027H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0029H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0029H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0029H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0030H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01			TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	5.53E-01	N	---	1.11E-01	2.00E+00	---	**6E-02**	3.16E-03	3.00E-05		**9E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	1.01E+00	N	---	2.02E-01	7.00E+00	---	**3E-02**	5.78E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	6.71E-01	Y	---	1.34E-01	3.00E+01	---	**4E-03**	3.83E-03	7.80E-06		**3E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	1.57E+00	N	---	3.14E-01	1.00E+02	---	**3E-03**	8.98E-03	6.00E-06		**5E-08**
CHLOROFORM	67-66-3	1.22E+00	N	---	2.44E-01	9.77E+01	---	**2E-03**	6.97E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	1.80E+00	N	---	3.60E-01	7.00E+01	---	**5E-03**	1.03E-02	-		---
ETHYLBENZENE	100-41-4	1.10E+00	N	---	2.20E-01	1.00E+03	---	**2E-04**	6.29E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.00E+00	Y	---	2.00E-01	1.00E+02	---	**2E-03**	5.71E-03	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.70E+00	N	---	3.40E-01	4.00E+01	---	**9E-03**	9.71E-03	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	1.35E+00	N	---	2.70E-01	2.00E+00	---	**1E-01**	7.71E-03	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0030H**	**Total Inhalation**	**---**	**2E-01**	**5E-07**
		Based on NDs only	**0E+00**	**2E-01**	**5E-07**
		Based on Detects only	**#VALUE!**	**6E-03**	**3E-08**
		Site-related only	**0E+00**	**1E-01**	**4E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0030H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.35E+00	NA	NA	1.16E-02	3.86E-03	1.0E-06	kidney	---	---	1E-08	4E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.35E+00	NA		7.71E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0037H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	1.40E-01	Y	---	2.80E-02	2.00E+00	---	**1E-02**	8.00E-04	3.00E-05	**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	3.70E-01	N	---	7.40E-02	3.00E+01	---	**2E-03**	2.11E-03	5.00E-06	**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	---	2.20E-02	7.00E+00	---	**3E-03**	6.29E-04	2.60E-05	**2E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	9.60E-01	Y	---	1.92E-01	3.00E+01	---	**6E-03**	5.49E-03	7.80E-06	**4E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	---	8.40E-02	1.00E+02	---	**8E-04**	2.40E-03	6.00E-06	**1E-08**
CHLOROFORM	67-66-3	2.70E-01	Y	---	5.40E-02	9.77E+01	---	**6E-04**	1.54E-03	2.30E-05	**4E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	9.30E-01	Y	---	1.86E-01	1.00E+03	---	**2E-04**	5.31E-03	2.50E-06	**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	1.80E+00	Y	---	3.60E-01	1.00E+02	---	**4E-03**	1.03E-02	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	5.30E-01	Y	---	1.06E-01	4.00E+01	---	**3E-03**	3.03E-03	2.60E-07	**8E-10**
TRICHLOROETHENE	79-01-6	1.50E-01	Y	---	3.00E-02	2.00E+00	---	**2E-02**	8.57E-04	4.10E-06	M **4E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0037H**	**Total Inhalation**	**---**	**5E-02**	**2E-07**
		Based on NDs only	**0E+00**	**2E-03**	**1E-08**
		Based on Detects only	**#VALUE!**	**5E-02**	**2E-07**
		Site-related only	**0E+00**	**2E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0037H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.50E-01	NA	NA	1.29E-03	4.29E-04	1.0E-06	kidney	---	---	1E-09	4E-10	**2E-09**
TRICHLOROETHENE	79-01-6	1.50E-01	NA		8.57E-04		3.1E-06	NHL+liver	---		3E-09		**3E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0040H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0040H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0040H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0041H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0041H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0041H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0045S**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0045S**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0045S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0047H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0047H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0047H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0050H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0050H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0050H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0051H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	2.00E-01	N	---	4.00E-02	2.00E+00	---	**2E-02**	1.14E-03	3.00E-05	**3E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	4.20E-01	Y	---	8.40E-02	3.00E+01	---	**3E-03**	2.40E-03	5.00E-06	**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	6.30E-02	Y	---	1.26E-02	7.00E+00	---	**2E-03**	3.60E-04	2.60E-05	**9E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	5.30E-01	Y	---	1.06E-01	3.00E+01	---	**4E-03**	3.03E-03	7.80E-06	**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	---	9.20E-02	1.00E+02	---	**9E-04**	2.63E-03	6.00E-06	**2E-08**
CHLOROFORM	67-66-3	1.60E-01	Y	---	3.20E-02	9.77E+01	---	**3E-04**	9.14E-04	2.30E-05	**2E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	1.30E-01	Y	---	2.60E-02	1.00E+03	---	**3E-05**	7.43E-04	2.50E-06	**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	5.50E-01	Y	---	1.10E-01	1.00E+02	---	**1E-03**	3.14E-03	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	2.00E-01	Y	---	4.00E-02	4.00E+01	---	**1E-03**	1.14E-03	2.60E-07	**3E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0051H**	**Total Inhalation**	**---**	**6E-02**	**1E-07**
		Based on NDs only	**0E+00**	**5E-02**	**4E-08**
		Based on Detects only	**#VALUE!**	**1E-02**	**8E-08**
		Site-related only	**0E+00**	**3E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0051H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0052H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0052H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0052H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0053H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0053H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0053H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0054H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0054H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0054H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0055H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0055H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0055H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0056H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0056H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0056H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0058H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0058H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0058H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0059H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	2.20E-01	N	---	4.40E-02	2.00E+00	---	**2E-02**	1.26E-03	3.00E-05	**4E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	3.60E-01	N	---	7.20E-02	3.00E+01	---	**2E-03**	2.06E-03	5.00E-06	**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	9.20E-02	Y	---	1.84E-02	7.00E+00	---	**3E-03**	5.26E-04	2.60E-05	**1E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	8.30E-01	Y	---	1.66E-01	3.00E+01	---	**6E-03**	4.74E-03	7.80E-06	**4E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	---	8.40E-02	1.00E+02	---	**8E-04**	2.40E-03	6.00E-06	**1E-08**
CHLOROFORM	67-66-3	1.00E-01	N	---	2.00E-02	9.77E+01	---	**2E-04**	5.71E-04	2.30E-05	**1E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	5.40E-01	Y	---	1.08E-01	1.00E+03	---	**1E-04**	3.09E-03	2.50E-06	**8E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	1.10E+00	Y	---	2.20E-01	1.00E+02	---	**2E-03**	6.29E-03	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	Y	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0059H**	**Total Inhalation**	**---**	**6E-02**	**1E-07**
		Based on NDs only	**0E+00**	**5E-02**	**7E-08**
		Based on Detects only	**#VALUE!**	**1E-02**	**7E-08**
		Site-related only	**0E+00**	**3E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0059H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0060H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0060H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0060H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0061H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0061H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0061H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0062H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0062H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0062H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0063H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05	---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06	---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05	---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06	---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06	---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05	---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06	---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.00E-02	4.00E+01	---	**2E-03**	2.00E-03	2.60E-07	**5E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.00E-02	2.00E+00	---	**3E-02**	1.43E-03	4.10E-06	M **7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0063H**	**Total Inhalation**	**---**	**3E-02**	**8E-09**
		Based on NDs only	**0E+00**	**3E-02**	**8E-09**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0063H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	2.14E-03	7.14E-04	1.0E-06	kidney	---	---	2E-09	7E-10	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		1.43E-03		3.1E-06	NHL+liver	---		4E-09		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0064H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	1.70E-01	N	---	3.40E-02	2.00E+00	---	**2E-02**	9.71E-04	3.00E-05	**3E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	2.80E-01	N	---	5.60E-02	3.00E+01	---	**2E-03**	1.60E-03	5.00E-06	**8E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	9.90E-02	Y	---	1.98E-02	7.00E+00	---	**3E-03**	5.66E-04	2.60E-05	**1E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	4.60E-01	Y	---	9.20E-02	3.00E+01	---	**3E-03**	2.63E-03	7.80E-06	**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	---	8.00E-02	1.00E+02	---	**8E-04**	2.29E-03	6.00E-06	**1E-08**
CHLOROFORM	67-66-3	8.90E-02	Y	---	1.78E-02	9.77E+01	---	**2E-04**	5.09E-04	2.30E-05	**1E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	7.40E-01	Y	---	1.48E-01	1.00E+03	---	**1E-04**	4.23E-03	2.50E-06	**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	3.10E+00	Y	---	6.20E-01	1.00E+02	---	**6E-03**	1.77E-02	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	5.10E-01	Y	---	1.02E-01	4.00E+01	---	**3E-03**	2.91E-03	2.60E-07	**8E-10**
TRICHLOROETHENE	79-01-6	3.40E-02	Y	---	6.80E-03	2.00E+00	---	**3E-03**	1.94E-04	4.10E-06	M **1E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0064H**	**Total Inhalation**	**---**	**4E-02**	**1E-07**
		Based on NDs only	**0E+00**	**2E-02**	**4E-08**
		Based on Detects only	**#VALUE!**	**2E-02**	**7E-08**
		Site-related only	**0E+00**	**8E-03**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0064H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	3.40E-02	NA	NA	2.91E-04	9.71E-05	1.0E-06	kidney	---	---	3E-10	1E-10	**4E-10**
TRICHLOROETHENE	79-01-6	3.40E-02	NA		1.94E-04		3.1E-06	NHL+liver	---		6E-10		**6E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0065H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01			TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	2.15E-01	N	---	4.30E-02	2.00E+00	---	**2E-02**	1.23E-03	3.00E-05		**4E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.55E-01	N	---	7.10E-02	3.00E+01	---	**2E-03**	2.03E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	7.00E-02	Y	---	1.40E-02	7.00E+00	---	**2E-03**	4.00E-04	2.60E-05		**1E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	7.60E-01	Y	---	1.52E-01	3.00E+01	---	**5E-03**	4.34E-03	7.80E-06		**3E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	---	8.20E-02	1.00E+02	---	**8E-04**	2.34E-03	6.00E-06		**1E-08**
CHLOROFORM	67-66-3	9.50E-02	N	---	1.90E-02	9.77E+01	---	**2E-04**	5.43E-04	2.30E-05		**1E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.70E-01	Y	---	5.40E-02	1.00E+03	---	**5E-05**	1.54E-03	2.50E-06		**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.00E+00	Y	---	2.00E-01	1.00E+02	---	**2E-03**	5.71E-03	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	8.30E-02	Y	---	1.66E-02	4.00E+01	---	**4E-04**	4.74E-04	2.60E-07		**1E-10**
TRICHLOROETHENE	79-01-6	1.05E-01	N	---	2.10E-02	2.00E+00	---	**1E-02**	6.00E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0065H**	**Total Inhalation**	**---**	**4E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**6E-08**
		Based on Detects only	**#VALUE!**	**1E-02**	**6E-08**
		Site-related only	**0E+00**	**1E-02**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0065H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.05E-01	NA	NA	9.00E-04	3.00E-04	1.0E-06	kidney	---	---	9E-10	3E-10	**1E-09**
TRICHLOROETHENE	79-01-6	1.05E-01	NA		6.00E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0066H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01			TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	1.95E-01	N	---	3.90E-02	2.00E+00	---	**2E-02**	1.11E-03	3.00E-05		**3E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.15E-01	N	---	6.30E-02	3.00E+01	---	**2E-03**	1.80E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	1.30E-01	Y	---	2.60E-02	7.00E+00	---	**4E-03**	7.43E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	6.80E-01	Y	---	1.36E-01	3.00E+01	---	**5E-03**	3.89E-03	7.80E-06		**3E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	---	8.60E-02	1.00E+02	---	**9E-04**	2.46E-03	6.00E-06		**1E-08**
CHLOROFORM	67-66-3	1.10E-01	Y	---	2.20E-02	9.77E+01	---	**2E-04**	6.29E-04	2.30E-05		**1E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	3.40E+00	Y	---	6.80E-01	1.00E+03	---	**7E-04**	1.94E-02	2.50E-06		**5E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	8.00E+00	Y	---	1.60E+00	1.00E+02	---	**2E-02**	4.57E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	9.90E-02	Y	---	1.98E-02	4.00E+01	---	**5E-04**	5.66E-04	2.60E-07		**1E-10**
TRICHLOROETHENE	79-01-6	9.50E-02	N	---	1.90E-02	2.00E+00	---	**1E-02**	5.43E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0066H**	**Total Inhalation**	**---**	**6E-02**	**2E-07**
		Based on NDs only	**0E+00**	**3E-02**	**5E-08**
		Based on Detects only	**#VALUE!**	**3E-02**	**1E-07**
		Site-related only	**0E+00**	**1E-02**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0066H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	NA	NA	8.14E-04	2.71E-04	1.0E-06	kidney	---	---	8E-10	3E-10	**1E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	NA		5.43E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0071H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	2.30E-01	N	---	4.60E-02	2.00E+00	---	**2E-02**	1.31E-03	3.00E-05	**4E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	3.70E-01	N	---	7.40E-02	3.00E+01	---	**2E-03**	2.11E-03	5.00E-06	**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	5.60E-02	Y	---	1.12E-02	7.00E+00	---	**2E-03**	3.20E-04	2.60E-05	**8E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	5.00E-01	Y	---	1.00E-01	3.00E+01	---	**3E-03**	2.86E-03	7.80E-06	**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	---	8.60E-02	1.00E+02	---	**9E-04**	2.46E-03	6.00E-06	**1E-08**
CHLOROFORM	67-66-3	1.10E-01	Y	---	2.20E-02	9.77E+01	---	**2E-04**	6.29E-04	2.30E-05	**1E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	1.10E-01	Y	---	2.20E-02	1.00E+03	---	**2E-05**	6.29E-04	2.50E-06	**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	3.90E-01	Y	---	7.80E-02	1.00E+02	---	**8E-04**	2.23E-03	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	1.70E-01	Y	---	3.40E-02	4.00E+01	---	**9E-04**	9.71E-04	2.60E-07	**3E-10**
TRICHLOROETHENE	79-01-6	1.10E-01	N	---	2.20E-02	2.00E+00	---	**1E-02**	6.29E-04	4.10E-06	M **3E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0071H**	**Total Inhalation**	**---**	**4E-02**	**1E-07**
		Based on NDs only	**0E+00**	**4E-02**	**5E-08**
		Based on Detects only	**#VALUE!**	**8E-03**	**6E-08**
		Site-related only	**0E+00**	**1E-02**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0071H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.10E-01	NA	NA	9.43E-04	3.14E-04	1.0E-06	kidney	---	---	9E-10	3E-10	**1E-09**
TRICHLOROETHENE	79-01-6	1.10E-01	NA		6.29E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0076H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	2.00E-01	N	---	4.00E-02	2.00E+00	---	**2E-02**	1.14E-03	3.00E-05	**3E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	3.30E-01	N	---	6.60E-02	3.00E+01	---	**2E-03**	1.89E-03	5.00E-06	**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	6.70E-02	Y	---	1.34E-02	7.00E+00	---	**2E-03**	3.83E-04	2.60E-05	**1E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	5.30E-01	Y	---	1.06E-01	3.00E+01	---	**4E-03**	3.03E-03	7.80E-06	**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	---	9.40E-02	1.00E+02	---	**9E-04**	2.69E-03	6.00E-06	**2E-08**
CHLOROFORM	67-66-3	8.20E-02	Y	---	1.64E-02	9.77E+01	---	**2E-04**	4.69E-04	2.30E-05	**1E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	8.30E-02	Y	---	1.66E-02	1.00E+03	---	**2E-05**	4.74E-04	2.50E-06	**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	3.00E-01	Y	---	6.00E-02	1.00E+02	---	**6E-04**	1.71E-03	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	1.25E-01	N	---	2.50E-02	4.00E+01	---	**6E-04**	7.14E-04	2.60E-07	**2E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	N	---	2.00E-02	2.00E+00	---	**1E-02**	5.71E-04	4.10E-06	M **3E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0076H**	**Total Inhalation**	**---**	**4E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**5E-08**
		Based on Detects only	**#VALUE!**	**7E-03**	**6E-08**
		Site-related only	**0E+00**	**1E-02**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0076H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	NA	NA	8.57E-04	2.86E-04	1.0E-06	kidney	---	---	9E-10	3E-10	**1E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	NA		5.71E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0091H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01			TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	2.05E-01	N	---	4.10E-02	2.00E+00	---	**2E-02**	1.17E-03	3.00E-05		**4E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	4.40E-01	Y	---	8.80E-02	3.00E+01	---	**3E-03**	2.51E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	4.00E-02	Y	---	8.00E-03	7.00E+00	---	**1E-03**	2.29E-04	2.60E-05		**6E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	6.80E-01	Y	---	1.36E-01	3.00E+01	---	**5E-03**	3.89E-03	7.80E-06		**3E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	---	9.20E-02	1.00E+02	---	**9E-04**	2.63E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	3.30E-01	Y	---	6.60E-02	9.77E+01	---	**7E-04**	1.89E-03	2.30E-05		**4E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.10E-01	Y	---	4.20E-02	1.00E+03	---	**4E-05**	1.20E-03	2.50E-06		**3E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	8.00E-01	Y	---	1.60E-01	1.00E+02	---	**2E-03**	4.57E-03	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.90E-01	Y	---	3.80E-02	4.00E+01	---	**1E-03**	1.09E-03	2.60E-07		**3E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	N	---	2.00E-02	2.00E+00	---	**1E-02**	5.71E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0091H**	**Total Inhalation**	**---**	**4E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**4E-08**
		Based on Detects only	**#VALUE!**	**1E-02**	**1E-07**
		Site-related only	**0E+00**	**1E-02**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0091H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	NA	NA	8.57E-04	2.86E-04	1.0E-06	kidney	---	---	9E-10	3E-10	**1E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	NA		5.71E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0098H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01			TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	2.10E-01	N	---	4.20E-02	2.00E+00	---	**2E-02**	1.20E-03	3.00E-05		**4E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.45E-01	N	---	6.90E-02	3.00E+01	---	**2E-03**	1.97E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	---	2.80E-02	7.00E+00	---	**4E-03**	8.00E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	7.60E-01	Y	---	1.52E-01	3.00E+01	---	**5E-03**	4.34E-03	7.80E-06		**3E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	---	9.00E-02	1.00E+02	---	**9E-04**	2.57E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	1.30E-01	Y	---	2.60E-02	9.77E+01	---	**3E-04**	7.43E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	3.40E+00	Y	---	6.80E-01	1.00E+03	---	**7E-04**	1.94E-02	2.50E-06		**5E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	7.90E+00	Y	---	1.58E+00	1.00E+02	---	**2E-02**	4.51E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.30E-01	Y	---	2.60E-02	4.00E+01	---	**7E-04**	7.43E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	N	---	2.00E-02	2.00E+00	---	**1E-02**	5.71E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0098H**	**Total Inhalation**	**---**	**6E-02**	**2E-07**
		Based on NDs only	**0E+00**	**3E-02**	**5E-08**
		Based on Detects only	**#VALUE!**	**3E-02**	**1E-07**
		Site-related only	**0E+00**	**1E-02**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0098H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	NA	NA	8.57E-04	2.86E-04	1.0E-06	kidney	---	---	9E-10	3E-10	**1E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	NA		5.71E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0102H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01			TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	1.85E-01	N	---	3.70E-02	2.00E+00	---	**2E-02**	1.06E-03	3.00E-05		**3E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.00E-01	N	---	6.00E-02	3.00E+01	---	**2E-03**	1.71E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	7.00E-02	N	---	1.40E-02	7.00E+00	---	**2E-03**	4.00E-04	2.60E-05		**1E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	3.60E-01	Y	---	7.20E-02	3.00E+01	---	**2E-03**	2.06E-03	7.80E-06		**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	---	9.00E-02	1.00E+02	---	**9E-04**	2.57E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	3.30E-01	Y	---	6.60E-02	9.77E+01	---	**7E-04**	1.89E-03	2.30E-05		**4E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	7.00E-02	N	---	1.40E-02	1.00E+03	---	**1E-05**	4.00E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	3.50E-01	Y	---	7.00E-02	1.00E+02	---	**7E-04**	2.00E-03	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.15E-01	N	---	2.30E-02	4.00E+01	---	**6E-04**	6.57E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	9.00E-02	N	---	1.80E-02	2.00E+00	---	**9E-03**	5.14E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0102H**	**Total Inhalation**	**---**	**4E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**5E-08**
		Based on Detects only	**#VALUE!**	**5E-03**	**7E-08**
		Site-related only	**0E+00**	**1E-02**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0102H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.00E-02	NA	NA	7.71E-04	2.57E-04	1.0E-06	kidney	---	---	8E-10	3E-10	**1E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	NA		5.14E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0118H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	2.10E-01	N	---	4.20E-02	2.00E+00	---	**2E-02**	1.20E-03	3.00E-05	**4E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	3.45E-01	N	---	6.90E-02	3.00E+01	---	**2E-03**	1.97E-03	5.00E-06	**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	7.50E-02	N	---	1.50E-02	7.00E+00	---	**2E-03**	4.29E-04	2.60E-05	**1E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	5.30E-01	Y	---	1.06E-01	3.00E+01	---	**4E-03**	3.03E-03	7.80E-06	**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	---	8.80E-02	1.00E+02	---	**9E-04**	2.51E-03	6.00E-06	**2E-08**
CHLOROFORM	67-66-3	9.40E-02	Y	---	1.88E-02	9.77E+01	---	**2E-04**	5.37E-04	2.30E-05	**1E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	1.20E-01	Y	---	2.40E-02	1.00E+03	---	**2E-05**	6.86E-04	2.50E-06	**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	4.50E-01	Y	---	9.00E-02	1.00E+02	---	**9E-04**	2.57E-03	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	1.40E-01	Y	---	2.80E-02	4.00E+01	---	**7E-04**	8.00E-04	2.60E-07	**2E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	N	---	2.00E-02	2.00E+00	---	**1E-02**	5.71E-04	4.10E-06	M **3E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0118H**	**Total Inhalation**	**---**	**4E-02**	**1E-07**
		Based on NDs only	**0E+00**	**4E-02**	**6E-08**
		Based on Detects only	**#VALUE!**	**6E-03**	**5E-08**
		Site-related only	**0E+00**	**1E-02**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0118H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	NA	NA	8.57E-04	2.86E-04	1.0E-06	kidney	---	---	9E-10	3E-10	**1E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	NA		5.71E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0121H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01			TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	1.90E-01	N	---	3.80E-02	2.00E+00	---	**2E-02**	1.09E-03	3.00E-05		**3E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.15E-01	N	---	6.30E-02	3.00E+01	---	**2E-03**	1.80E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	1.50E-01	Y	---	3.00E-02	7.00E+00	---	**4E-03**	8.57E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	8.50E-01	Y	---	1.70E-01	3.00E+01	---	**6E-03**	4.86E-03	7.80E-06		**4E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.60E-01	Y	---	7.20E-02	1.00E+02	---	**7E-04**	2.06E-03	6.00E-06		**1E-08**
CHLOROFORM	67-66-3	1.20E-01	Y	---	2.40E-02	9.77E+01	---	**2E-04**	6.86E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.40E+00	Y	---	4.80E-01	1.00E+03	---	**5E-04**	1.37E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	5.10E+00	Y	---	1.02E+00	1.00E+02	---	**1E-02**	2.91E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.40E-01	Y	---	2.80E-02	4.00E+01	---	**7E-04**	8.00E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	9.50E-02	N	---	1.90E-02	2.00E+00	---	**1E-02**	5.43E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0121H**	**Total Inhalation**	**---**	**5E-02**	**2E-07**
		Based on NDs only	**0E+00**	**3E-02**	**4E-08**
		Based on Detects only	**#VALUE!**	**2E-02**	**1E-07**
		Site-related only	**0E+00**	**1E-02**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0121H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	NA	NA	8.14E-04	2.71E-04	1.0E-06	kidney	---	---	8E-10	3E-10	**1E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	NA		5.43E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0122H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	2.00E-01	N	---	4.00E-02	2.00E+00	---	**2E-02**	1.14E-03	3.00E-05	**3E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	3.30E-01	N	---	6.60E-02	3.00E+01	---	**2E-03**	1.89E-03	5.00E-06	**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	6.20E-02	Y	---	1.24E-02	7.00E+00	---	**2E-03**	3.54E-04	2.60E-05	**9E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	7.00E-01	Y	---	1.40E-01	3.00E+01	---	**5E-03**	4.00E-03	7.80E-06	**3E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	---	9.00E-02	1.00E+02	---	**9E-04**	2.57E-03	6.00E-06	**2E-08**
CHLOROFORM	67-66-3	9.80E-02	Y	---	1.96E-02	9.77E+01	---	**2E-04**	5.60E-04	2.30E-05	**1E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	2.50E+00	Y	---	5.00E-01	1.00E+03	---	**5E-04**	1.43E-02	2.50E-06	**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	7.20E+00	Y	---	1.44E+00	1.00E+02	---	**1E-02**	4.11E-02	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	1.80E-01	Y	---	3.60E-02	4.00E+01	---	**9E-04**	1.03E-03	2.60E-07	**3E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	N	---	2.00E-02	2.00E+00	---	**1E-02**	5.71E-04	4.10E-06	M **3E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0122H**	**Total Inhalation**	**---**	**6E-02**	**2E-07**
		Based on NDs only	**0E+00**	**3E-02**	**5E-08**
		Based on Detects only	**#VALUE!**	**2E-02**	**1E-07**
		Site-related only	**0E+00**	**1E-02**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0122H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	NA	NA	8.57E-04	2.86E-04	1.0E-06	kidney	---	---	9E-10	3E-10	**1E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	NA		5.71E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0135H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01			TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	1.90E-01	N	---	3.80E-02	2.00E+00	---	**2E-02**	1.09E-03	3.00E-05		**3E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.10E-01	N	---	6.20E-02	3.00E+01	---	**2E-03**	1.77E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	7.00E-02	N	---	1.40E-02	7.00E+00	---	**2E-03**	4.00E-04	2.60E-05		**1E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	5.80E-01	Y	---	1.16E-01	3.00E+01	---	**4E-03**	3.31E-03	7.80E-06		**3E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	---	9.20E-02	1.00E+02	---	**9E-04**	2.63E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	1.10E-01	Y	---	2.20E-02	9.77E+01	---	**2E-04**	6.29E-04	2.30E-05		**1E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.60E-01	Y	---	3.20E-02	1.00E+03	---	**3E-05**	9.14E-04	2.50E-06		**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	5.20E-01	Y	---	1.04E-01	1.00E+02	---	**1E-03**	2.97E-03	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.50E-01	Y	---	3.00E-02	4.00E+01	---	**8E-04**	8.57E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	9.00E-02	N	---	1.80E-02	2.00E+00	---	**9E-03**	5.14E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0135H**	**Total Inhalation**	**---**	**4E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**5E-08**
		Based on Detects only	**#VALUE!**	**7E-03**	**6E-08**
		Site-related only	**0E+00**	**1E-02**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0135H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.00E-02	NA	NA	7.71E-04	2.57E-04	1.0E-06	kidney	---	---	8E-10	3E-10	**1E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	NA		5.14E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0139H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	2.30E-01	N	---	4.60E-02	2.00E+00	---	**2E-02**	1.31E-03	3.00E-05	**4E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	3.70E-01	N	---	7.40E-02	3.00E+01	---	**2E-03**	2.11E-03	5.00E-06	**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	6.10E-02	Y	---	1.22E-02	7.00E+00	---	**2E-03**	3.49E-04	2.60E-05	**9E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	5.10E-01	Y	---	1.02E-01	3.00E+01	---	**3E-03**	2.91E-03	7.80E-06	**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	---	8.00E-02	1.00E+02	---	**8E-04**	2.29E-03	6.00E-06	**1E-08**
CHLOROFORM	67-66-3	7.70E-02	Y	---	1.54E-02	9.77E+01	---	**2E-04**	4.40E-04	2.30E-05	**1E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	8.00E-02	Y	---	1.60E-02	1.00E+03	---	**2E-05**	4.57E-04	2.50E-06	**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	2.90E-01	Y	---	5.80E-02	1.00E+02	---	**6E-04**	1.66E-03	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	1.40E-01	N	---	2.80E-02	4.00E+01	---	**7E-04**	8.00E-04	2.60E-07	**2E-10**
TRICHLOROETHENE	79-01-6	1.10E-01	N	---	2.20E-02	2.00E+00	---	**1E-02**	6.29E-04	4.10E-06	M **3E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0139H**	**Total Inhalation**	**---**	**4E-02**	**1E-07**
		Based on NDs only	**0E+00**	**4E-02**	**5E-08**
		Based on Detects only	**#VALUE!**	**7E-03**	**6E-08**
		Site-related only	**0E+00**	**1E-02**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0139H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.10E-01	NA	NA	9.43E-04	3.14E-04	1.0E-06	kidney	---	---	9E-10	3E-10	**1E-09**
TRICHLOROETHENE	79-01-6	1.10E-01	NA		6.29E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0146H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01			TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	1.95E-01	N	---	3.90E-02	2.00E+00	---	**2E-02**	1.11E-03	3.00E-05		**3E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	1.80E-01	Y	---	3.60E-02	3.00E+01	---	**1E-03**	1.03E-03	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	5.50E-02	Y	---	1.10E-02	7.00E+00	---	**2E-03**	3.14E-04	2.60E-05		**8E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	4.20E-01	Y	---	8.40E-02	3.00E+01	---	**3E-03**	2.40E-03	7.80E-06		**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	---	8.40E-02	1.00E+02	---	**8E-04**	2.40E-03	6.00E-06		**1E-08**
CHLOROFORM	67-66-3	7.60E-02	Y	---	1.52E-02	9.77E+01	---	**2E-04**	4.34E-04	2.30E-05		**1E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	7.10E-02	Y	---	1.42E-02	1.00E+03	---	**1E-05**	4.06E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	2.40E-01	Y	---	4.80E-02	1.00E+02	---	**5E-04**	1.37E-03	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.20E-01	N	---	2.40E-02	4.00E+01	---	**6E-04**	6.86E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	9.50E-02	N	---	1.90E-02	2.00E+00	---	**1E-02**	5.43E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0146H**	**Total Inhalation**	**---**	**4E-02**	**9E-08**
		Based on NDs only	**0E+00**	**3E-02**	**4E-08**
		Based on Detects only	**#VALUE!**	**7E-03**	**6E-08**
		Site-related only	**0E+00**	**1E-02**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0146H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	NA	NA	8.14E-04	2.71E-04	1.0E-06	kidney	---	---	8E-10	3E-10	**1E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	NA		5.43E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0148H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01			TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	2.05E-01	N	---	4.10E-02	2.00E+00	---	**2E-02**	1.17E-03	3.00E-05		**4E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	2.60E-01	Y	---	5.20E-02	3.00E+01	---	**2E-03**	1.49E-03	5.00E-06		**7E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	---	2.80E-02	7.00E+00	---	**4E-03**	8.00E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	7.20E-01	Y	---	1.44E-01	3.00E+01	---	**5E-03**	4.11E-03	7.80E-06		**3E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	---	8.60E-02	1.00E+02	---	**9E-04**	2.46E-03	6.00E-06		**1E-08**
CHLOROFORM	67-66-3	1.30E-01	Y	---	2.60E-02	9.77E+01	---	**3E-04**	7.43E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	3.80E+00	Y	---	7.60E-01	1.00E+03	---	**8E-04**	2.17E-02	2.50E-06		**5E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	9.00E+00	Y	---	1.80E+00	1.00E+02	---	**2E-02**	5.14E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.50E-01	Y	---	3.00E-02	4.00E+01	---	**8E-04**	8.57E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	N	---	2.00E-02	2.00E+00	---	**1E-02**	5.71E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0148H**	**Total Inhalation**	**---**	**6E-02**	**2E-07**
		Based on NDs only	**0E+00**	**3E-02**	**4E-08**
		Based on Detects only	**#VALUE!**	**3E-02**	**1E-07**
		Site-related only	**0E+00**	**1E-02**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0148H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	NA	NA	8.57E-04	2.86E-04	1.0E-06	kidney	---	---	9E-10	3E-10	**1E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	NA		5.71E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0153H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01			TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	2.05E-01	N	---	4.10E-02	2.00E+00	---	**2E-02**	1.17E-03	3.00E-05		**4E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	1.10E-01	Y	---	2.20E-02	3.00E+01	---	**7E-04**	6.29E-04	5.00E-06		**3E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	9.60E-02	Y	---	1.92E-02	7.00E+00	---	**3E-03**	5.49E-04	2.60E-05		**1E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	7.40E-01	Y	---	1.48E-01	3.00E+01	---	**5E-03**	4.23E-03	7.80E-06		**3E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	---	8.80E-02	1.00E+02	---	**9E-04**	2.51E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	1.20E-01	Y	---	2.40E-02	9.77E+01	---	**2E-04**	6.86E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	4.70E+00	Y	---	9.40E-01	1.00E+03	---	**9E-04**	2.69E-02	2.50E-06		**7E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.20E+01	Y	---	2.40E+00	1.00E+02	---	**2E-02**	6.86E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	2.00E-01	Y	---	4.00E-02	4.00E+01	---	**1E-03**	1.14E-03	2.60E-07		**3E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	N	---	2.00E-02	2.00E+00	---	**1E-02**	5.71E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0153H**	**Total Inhalation**	**---**	**7E-02**	**2E-07**
		Based on NDs only	**0E+00**	**3E-02**	**4E-08**
		Based on Detects only	**#VALUE!**	**4E-02**	**1E-07**
		Site-related only	**0E+00**	**1E-02**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0153H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	NA	NA	8.57E-04	2.86E-04	1.0E-06	kidney	---	---	9E-10	3E-10	**1E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	NA		5.71E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0162H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	1.90E-01	N	---	3.80E-02	2.00E+00	---	**2E-02**	1.09E-03	3.00E-05	**3E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	3.10E-01	N	---	6.20E-02	3.00E+01	---	**2E-03**	1.77E-03	5.00E-06	**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	6.80E-02	Y	---	1.36E-02	7.00E+00	---	**2E-03**	3.89E-04	2.60E-05	**1E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	5.10E-01	Y	---	1.02E-01	3.00E+01	---	**3E-03**	2.91E-03	7.80E-06	**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	---	8.60E-02	1.00E+02	---	**9E-04**	2.46E-03	6.00E-06	**1E-08**
CHLOROFORM	67-66-3	9.80E-02	Y	---	1.96E-02	9.77E+01	---	**2E-04**	5.60E-04	2.30E-05	**1E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	1.20E-01	Y	---	2.40E-02	1.00E+03	---	**2E-05**	6.86E-04	2.50E-06	**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	4.00E-01	Y	---	8.00E-02	1.00E+02	---	**8E-04**	2.29E-03	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	2.70E-01	Y	---	5.40E-02	4.00E+01	---	**1E-03**	1.54E-03	2.60E-07	**4E-10**
TRICHLOROETHENE	79-01-6	9.00E-02	N	---	1.80E-02	2.00E+00	---	**9E-03**	5.14E-04	4.10E-06	M **3E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0162H**	**Total Inhalation**	**---**	**4E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**4E-08**
		Based on Detects only	**#VALUE!**	**9E-03**	**6E-08**
		Site-related only	**0E+00**	**1E-02**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0162H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.00E-02	NA	NA	7.71E-04	2.57E-04	1.0E-06	kidney	---	---	8E-10	3E-10	**1E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	NA		5.14E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0173H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	2.00E-01	N	---	4.00E-02	2.00E+00	---	**2E-02**	1.14E-03	3.00E-05	**3E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	3.30E-01	N	---	6.60E-02	3.00E+01	---	**2E-03**	1.89E-03	5.00E-06	**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	5.40E-02	Y	---	1.08E-02	7.00E+00	---	**2E-03**	3.09E-04	2.60E-05	**8E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	5.10E-01	Y	---	1.02E-01	3.00E+01	---	**3E-03**	2.91E-03	7.80E-06	**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	---	8.80E-02	1.00E+02	---	**9E-04**	2.51E-03	6.00E-06	**2E-08**
CHLOROFORM	67-66-3	7.20E-02	Y	---	1.44E-02	9.77E+01	---	**1E-04**	4.11E-04	2.30E-05	**9E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	7.10E-02	Y	---	1.42E-02	1.00E+03	---	**1E-05**	4.06E-04	2.50E-06	**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	2.50E-01	Y	---	5.00E-02	1.00E+02	---	**5E-04**	1.43E-03	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	1.25E-01	N	---	2.50E-02	4.00E+01	---	**6E-04**	7.14E-04	2.60E-07	**2E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	N	---	2.00E-02	2.00E+00	---	**1E-02**	5.71E-04	4.10E-06	M **3E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0173H**	**Total Inhalation**	**---**	**4E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**5E-08**
		Based on Detects only	**#VALUE!**	**6E-03**	**6E-08**
		Site-related only	**0E+00**	**1E-02**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0173H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	NA	NA	8.57E-04	2.86E-04	1.0E-06	kidney	---	---	9E-10	3E-10	**1E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	NA		5.71E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0174H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01			TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	1.95E-01	N	---	3.90E-02	2.00E+00	---	**2E-02**	1.11E-03	3.00E-05		**3E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.15E-01	N	---	6.30E-02	3.00E+01	---	**2E-03**	1.80E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	5.50E-02	Y	---	1.10E-02	7.00E+00	---	**2E-03**	3.14E-04	2.60E-05		**8E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	4.10E-01	Y	---	8.20E-02	3.00E+01	---	**3E-03**	2.34E-03	7.80E-06		**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	---	8.80E-02	1.00E+02	---	**9E-04**	2.51E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	7.00E-02	Y	---	1.40E-02	9.77E+01	---	**1E-04**	4.00E-04	2.30E-05		**9E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	6.70E-02	Y	---	1.34E-02	1.00E+03	---	**1E-05**	3.83E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	2.30E-01	Y	---	4.60E-02	1.00E+02	---	**5E-04**	1.31E-03	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.20E-01	N	---	2.40E-02	4.00E+01	---	**6E-04**	6.86E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	9.50E-02	N	---	1.90E-02	2.00E+00	---	**1E-02**	5.43E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0174H**	**Total Inhalation**	**---**	**4E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**5E-08**
		Based on Detects only	**#VALUE!**	**6E-03**	**5E-08**
		Site-related only	**0E+00**	**1E-02**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0174H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	NA	NA	8.14E-04	2.71E-04	1.0E-06	kidney	---	---	8E-10	3E-10	**1E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	NA		5.43E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0302H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01			TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	1.65E-01	N	---	3.30E-02	2.00E+00	---	**2E-02**	9.43E-04	3.00E-05		**3E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	2.70E-01	N	---	5.40E-02	3.00E+01	---	**2E-03**	1.54E-03	5.00E-06		**8E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	9.70E-02	Y	---	1.94E-02	7.00E+00	---	**3E-03**	5.54E-04	2.60E-05		**1E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	5.40E-01	Y	---	1.08E-01	3.00E+01	---	**4E-03**	3.09E-03	7.80E-06		**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.20E-01	Y	---	6.40E-02	1.00E+02	---	**6E-04**	1.83E-03	6.00E-06		**1E-08**
CHLOROFORM	67-66-3	8.20E-02	Y	---	1.64E-02	9.77E+01	---	**2E-04**	4.69E-04	2.30E-05		**1E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	6.40E-01	Y	---	1.28E-01	1.00E+03	---	**1E-04**	3.66E-03	2.50E-06		**9E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	2.90E+00	Y	---	5.80E-01	1.00E+02	---	**6E-03**	1.66E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.70E-01	Y	---	7.40E-02	4.00E+01	---	**2E-03**	2.11E-03	2.60E-07		**5E-10**
TRICHLOROETHENE	79-01-6	8.00E-02	N	---	1.60E-02	2.00E+00	---	**8E-03**	4.57E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0302H**	**Total Inhalation**	**---**	**4E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**4E-08**
		Based on Detects only	**#VALUE!**	**1E-02**	**7E-08**
		Site-related only	**0E+00**	**1E-02**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0302H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	8.00E-02	NA	NA	6.86E-04	2.29E-04	1.0E-06	kidney	---	---	7E-10	2E-10	**9E-10**
TRICHLOROETHENE	79-01-6	8.00E-02	NA		4.57E-04		3.1E-06	NHL+liver	---		1E-09		**1E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0334H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01			TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	2.22E+00	N	---	4.43E-01	2.00E+00	---	**2E-01**	1.27E-02	3.00E-05		**4E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.61E-01	N	---	7.21E-02	3.00E+01	---	**2E-03**	2.06E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	1.03E-01	Y	---	2.06E-02	7.00E+00	---	**3E-03**	5.89E-04	2.60E-05		**2E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	7.06E-01	Y	---	1.41E-01	3.00E+01	---	**5E-03**	4.03E-03	7.80E-06		**3E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	5.52E-01	Y	---	1.10E-01	1.00E+02	---	**1E-03**	3.15E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	4.87E-02	N	---	9.73E-03	9.77E+01	---	**1E-04**	2.78E-04	2.30E-05		**6E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	9.84E-01	Y	---	1.97E-01	1.00E+03	---	**2E-04**	5.62E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	3.67E+00	Y	---	7.34E-01	1.00E+02	---	**7E-03**	2.10E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.74E-01	Y	---	7.48E-02	4.00E+01	---	**2E-03**	2.14E-03	2.60E-07		**6E-10**
TRICHLOROETHENE	79-01-6	1.42E-01	Y	---	2.84E-02	2.00E+00	---	**1E-02**	8.11E-04	4.10E-06	M	**4E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0334H**	**Total Inhalation**	**---**	**3E-01**	**5E-07**
		Based on NDs only	**0E+00**	**2E-01**	**4E-07**
		Based on Detects only	**#VALUE!**	**3E-02**	**8E-08**
		Site-related only	**0E+00**	**2E-02**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0334H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.42E-01	NA	NA	1.22E-03	4.06E-04	1.0E-06	kidney	---	---	1E-09	4E-10	**2E-09**
TRICHLOROETHENE	79-01-6	1.42E-01	NA		8.11E-04		3.1E-06	NHL+liver	---		3E-09		**3E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**365S**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01			TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	1.95E-01	N	---	3.90E-02	2.00E+00	---	**2E-02**	1.11E-03	3.00E-05		**3E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.15E-01	N	---	6.30E-02	3.00E+01	---	**2E-03**	1.80E-03	5.00E-06		**9E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	7.20E-02	Y	---	1.44E-02	7.00E+00	---	**2E-03**	4.11E-04	2.60E-05		**1E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	4.60E-01	Y	---	9.20E-02	3.00E+01	---	**3E-03**	2.63E-03	7.80E-06		**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	---	7.60E-02	1.00E+02	---	**8E-04**	2.17E-03	6.00E-06		**1E-08**
CHLOROFORM	67-66-3	9.00E-02	Y	---	1.80E-02	9.77E+01	---	**2E-04**	5.14E-04	2.30E-05		**1E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	3.90E-01	Y	---	7.80E-02	1.00E+03	---	**8E-05**	2.23E-03	2.50E-06		**6E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.90E+00	Y	---	3.80E-01	1.00E+02	---	**4E-03**	1.09E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	2.10E-01	Y	---	4.20E-02	4.00E+01	---	**1E-03**	1.20E-03	2.60E-07		**3E-10**
TRICHLOROETHENE	79-01-6	9.50E-02	N	---	1.90E-02	2.00E+00	---	**1E-02**	5.43E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**365S**	**Total Inhalation**	**---**	**4E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**5E-08**
		Based on Detects only	**#VALUE!**	**1E-02**	**6E-08**
		Site-related only	**0E+00**	**1E-02**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**365S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	NA	NA	8.14E-04	2.71E-04	1.0E-06	kidney	---	---	8E-10	3E-10	**1E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	NA		5.43E-04		3.1E-06	NHL+liver	---		2E-09		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0381H**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult			CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01		TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	1.65E-01	N	---	3.30E-02	2.00E+00	---	**2E-02**	9.43E-04	3.00E-05	**3E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	1.50E-01	Y	---	3.00E-02	3.00E+01	---	**1E-03**	8.57E-04	5.00E-06	**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	---	1.54E-02	7.00E+00	---	**2E-03**	4.40E-04	2.60E-05	**1E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	4.30E-01	Y	---	8.60E-02	3.00E+01	---	**3E-03**	2.46E-03	7.80E-06	**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	3.70E-01	Y	---	7.40E-02	1.00E+02	---	**7E-04**	2.11E-03	6.00E-06	**1E-08**
CHLOROFORM	67-66-3	9.50E-02	Y	---	1.90E-02	9.77E+01	---	**2E-04**	5.43E-04	2.30E-05	**1E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	2.80E-01	Y	---	5.60E-02	1.00E+03	---	**6E-05**	1.60E-03	2.50E-06	**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	1.20E+00	Y	---	2.40E-01	1.00E+02	---	**2E-03**	6.86E-03	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	1.90E-01	Y	---	3.80E-02	4.00E+01	---	**1E-03**	1.09E-03	2.60E-07	**3E-10**
TRICHLOROETHENE	79-01-6	8.00E-02	N	---	1.60E-02	2.00E+00	---	**8E-03**	4.57E-04	4.10E-06	M **2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0381H**	**Total Inhalation**	**---**	**3E-02**	**9E-08**
		Based on NDs only	**0E+00**	**2E-02**	**3E-08**
		Based on Detects only	**#VALUE!**	**1E-02**	**6E-08**
		Site-related only	**0E+00**	**1E-02**	**7E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0381H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	8.00E-02	NA	NA	6.86E-04	2.29E-04	1.0E-06	kidney	---	---	7E-10	2E-10	**9E-10**
TRICHLOROETHENE	79-01-6	8.00E-02	NA		4.57E-04		3.1E-06	NHL+liver	---		1E-09		**1E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**B32**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01			TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	1.65E-01	N	---	3.30E-02	2.00E+00	---	**2E-02**	9.43E-04	3.00E-05		**3E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	2.70E-01	N	---	5.40E-02	3.00E+01	---	**2E-03**	1.54E-03	5.00E-06		**8E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	7.40E-02	Y	---	1.48E-02	7.00E+00	---	**2E-03**	4.23E-04	2.60E-05		**1E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	4.90E-01	Y	---	9.80E-02	3.00E+01	---	**3E-03**	2.80E-03	7.80E-06		**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	6.90E-01	Y	---	1.38E-01	1.00E+02	---	**1E-03**	3.94E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	9.00E-02	Y	---	1.80E-02	9.77E+01	---	**2E-04**	5.14E-04	2.30E-05		**1E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	7.80E-01	Y	---	1.56E-01	1.00E+03	---	**2E-04**	4.46E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	3.60E+00	Y	---	7.20E-01	1.00E+02	---	**7E-03**	2.06E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	4.30E-01	Y	---	8.60E-02	4.00E+01	---	**2E-03**	2.46E-03	2.60E-07		**6E-10**
TRICHLOROETHENE	79-01-6	8.00E-02	N	---	1.60E-02	2.00E+00	---	**8E-03**	4.57E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**B32**	**Total Inhalation**	**---**	**4E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**4E-08**
		Based on Detects only	**#VALUE!**	**2E-02**	**8E-08**
		Site-related only	**0E+00**	**1E-02**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**B32**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	8.00E-02	NA	NA	6.86E-04	2.29E-04	1.0E-06	kidney	---	---	7E-10	2E-10	**9E-10**
TRICHLOROETHENE	79-01-6	8.00E-02	NA		4.57E-04		3.1E-06	NHL+liver	---		1E-09		**1E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**building 6**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01			TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	5.00E-01	N	---	1.00E-01	2.00E+00	---	**5E-02**	2.86E-03	3.00E-05		**9E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	7.40E-01	Y	---	1.48E-01	3.00E+01	---	**5E-03**	4.23E-03	5.00E-06		**2E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	5.00E-01	N	---	1.00E-01	7.00E+00	---	**1E-02**	2.86E-03	2.60E-05		**7E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	3.60E-01	Y	---	7.20E-02	3.00E+01	---	**2E-03**	2.06E-03	7.80E-06		**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.90E-01	Y	---	9.80E-02	1.00E+02	---	**1E-03**	2.80E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	2.40E-01	Y	---	4.80E-02	9.77E+01	---	**5E-04**	1.37E-03	2.30E-05		**3E-08**
ETHYL ACETATE	141-78-6	8.90E+00	Y	---	1.78E+00	7.00E+01	---	**3E-02**	5.09E-02	-		---
ETHYLBENZENE	100-41-4	1.80E-01	Y	---	3.60E-02	1.00E+03	---	**4E-05**	1.03E-03	2.50E-06		**3E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	7.10E-01	Y	---	1.42E-01	1.00E+02	---	**1E-03**	4.06E-03	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	8.31E+00	Y	---	1.66E+00	4.00E+01	---	**4E-02**	4.75E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	5.00E-01	N	---	1.00E-01	2.00E+00	---	**5E-02**	2.86E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**building 6**	**Total Inhalation**	**---**	**2E-01**	**3E-07**
		Based on NDs only	**0E+00**	**1E-01**	**2E-07**
		Based on Detects only	**#VALUE!**	**8E-02**	**1E-07**
		Site-related only	**0E+00**	**1E-01**	**5E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**building 6**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-01	NA	NA	4.29E-03	1.43E-03	1.0E-06	kidney	---	---	4E-09	1E-09	**6E-09**
TRICHLOROETHENE	79-01-6	5.00E-01	NA		2.86E-03		3.1E-06	NHL+liver	---		9E-09		**9E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND

Based on CTE Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**building 7**

Pathway:

Inhalation of Outdoor Air

				CTE child	CTE adult				CTE lifetime			
			TWFnc (unitless)	#N/A	2.00E-01			TWFc (unitless)	5.71E-03			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**			
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**		**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	4.40E-01	N	---	8.80E-02	2.00E+00	---	**4E-02**	2.51E-03	3.00E-05		**8E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	4.50E-01	N	---	9.00E-02	3.00E+01	---	**3E-03**	2.57E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	4.50E-01	N	---	9.00E-02	7.00E+00	---	**1E-02**	2.57E-03	2.60E-05		**7E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	2.00E-01	Y	---	4.00E-02	3.00E+01	---	**1E-03**	1.14E-03	7.80E-06		**9E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.70E-01	Y	---	7.40E-02	1.00E+02	---	**7E-04**	2.11E-03	6.00E-06		**1E-08**
CHLOROFORM	67-66-3	4.60E-01	N	---	9.20E-02	9.77E+01	---	**9E-04**	2.63E-03	2.30E-05		**6E-08**
ETHYL ACETATE	141-78-6	1.00E+00	Y	---	2.00E-01	7.00E+01	---	**3E-03**	5.71E-03	-		---
ETHYLBENZENE	100-41-4	4.40E-01	N	---	8.80E-02	1.00E+03	---	**9E-05**	2.51E-03	2.50E-06		**6E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	2.70E-01	Y	---	5.40E-02	1.00E+02	---	**5E-04**	1.54E-03	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	4.50E-01	N	---	9.00E-02	4.00E+01	---	**2E-03**	2.57E-03	2.60E-07		**7E-10**
TRICHLOROETHENE	79-01-6	4.50E-01	N	---	9.00E-02	2.00E+00	---	**5E-02**	2.57E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**building 7**	**Total Inhalation**	**---**	**1E-01**	**3E-07**
		Based on NDs only	**0E+00**	**1E-01**	**2E-07**
		Based on Detects only	**#VALUE!**	**5E-03**	**2E-08**
		Site-related only	**0E+00**	**5E-02**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**building 7**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	CTE child	CTE adult
TWFc (unitless)	#N/A	5.71E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	4.50E-01	NA	NA	3.86E-03	1.29E-03	1.0E-06	kidney	---	---	4E-09	1E-09	**5E-09**
TRICHLOROETHENE	79-01-6	4.50E-01	NA		2.57E-03		3.1E-06	NHL+liver	---		8E-09		**8E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0001H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0001H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0001H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0002H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0002H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0002H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0003H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.05E-01	N	6.16E-03	---	2.00E+00	**3E-03**	**---**	5.28E-04	3.00E-05		**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.35E-01	N	1.01E-02	---	3.00E+01	**3E-04**	**---**	8.63E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	8.70E-02	Y	2.62E-03	---	7.00E+00	**4E-04**	**---**	2.24E-04	2.60E-05		**6E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	1.80E+00	Y	5.41E-02	---	3.00E+01	**2E-03**	**---**	4.64E-03	7.80E-06		**4E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	1.14E-02	---	1.00E+02	**1E-04**	**---**	9.79E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	1.60E-01	Y	4.81E-03	---	9.77E+01	**5E-05**	**---**	4.12E-04	2.30E-05		**9E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	4.30E-01	Y	1.29E-02	---	1.00E+03	**1E-05**	**---**	1.11E-03	2.50E-06		**3E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.70E+00	Y	5.11E-02	---	1.00E+02	**5E-04**	**---**	4.38E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.10E-01	Y	3.31E-03	---	4.00E+01	**8E-05**	**---**	2.83E-04	2.60E-07		**7E-11**
TRICHLOROETHENE	79-01-6	2.90E-02	Y	8.72E-04	---	2.00E+00	**4E-04**	**---**	7.47E-05	4.10E-06	M	**6E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0003H**	**Total Inhalation**	**7E-03**	**0E+00**	**8E-08**
		Based on NDs only	**3E-03**	**0E+00**	**2E-08**
		Based on Detects only	**3E-03**	**All ND**	**6E-08**
		Site-related only	**9E-04**	**0E+00**	**5E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0003H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.90E-02	2.49E-04	1.49E-04	---	---	1.0E-06	kidney	2E-10	1E-10	---	---	**4E-10**
TRICHLOROETHENE	79-01-6	2.90E-02	7.47E-05		---		3.1E-06	NHL+liver	2E-10		---		**2E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0004H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0004H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0004H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0011H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.40E-01	Y	4.21E-03	---	2.00E+00	**2E-03**	**---**	3.61E-04	3.00E-05		**1E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	1.80E-01	Y	5.41E-03	---	3.00E+01	**2E-04**	**---**	4.64E-04	5.00E-06		**2E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	4.21E-03	---	7.00E+00	**6E-04**	**---**	3.61E-04	2.60E-05		**9E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	1.10E+00	Y	3.31E-02	---	3.00E+01	**1E-03**	**---**	2.83E-03	7.80E-06		**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	1.26E-02	---	1.00E+02	**1E-04**	**---**	1.08E-03	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	1.00E+00	Y	3.01E-02	---	9.77E+01	**3E-04**	**---**	2.58E-03	2.30E-05		**6E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	9.80E-01	Y	2.95E-02	---	1.00E+03	**3E-05**	**---**	2.53E-03	2.50E-06		**6E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.80E+00	Y	5.41E-02	---	1.00E+02	**5E-04**	**---**	4.64E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	5.80E-01	Y	1.74E-02	---	4.00E+01	**4E-04**	**---**	1.49E-03	2.60E-07		**4E-10**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	8.72E-03	---	2.00E+00	**4E-03**	**---**	7.47E-04	4.10E-06	M	**6E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0011H**	**Total Inhalation**	**1E-02**	**0E+00**	**1E-07**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**1E-02**	**All ND**	**1E-07**
		Site-related only	**5E-03**	**0E+00**	**9E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0011H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.90E-01	2.49E-03	1.49E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**4E-09**
TRICHLOROETHENE	79-01-6	2.90E-01	7.47E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0012H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0012H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0012H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0013H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0013H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0013H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0025H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0025H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0025H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0026H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	5.53E-01	N	1.66E-02	---	2.00E+00	**8E-03**	**---**	1.42E-03	3.00E-05		**4E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	1.40E-01	Y	4.21E-03	---	3.00E+01	**1E-04**	**---**	3.61E-04	5.00E-06		**2E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	6.00E-02	Y	1.80E-03	---	7.00E+00	**3E-04**	**---**	1.55E-04	2.60E-05		**4E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.30E-01	Y	1.59E-02	---	3.00E+01	**5E-04**	**---**	1.37E-03	7.80E-06		**1E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	1.26E-02	---	1.00E+02	**1E-04**	**---**	1.08E-03	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	1.10E-01	Y	3.31E-03	---	9.77E+01	**3E-05**	**---**	2.83E-04	2.30E-05		**7E-09**
ETHYL ACETATE	141-78-6	1.80E+00	N	5.41E-02	---	7.00E+01	**8E-04**	**---**	4.64E-03	-		**---**
ETHYLBENZENE	100-41-4	7.80E-02	Y	2.34E-03	---	1.00E+03	**2E-06**	**---**	2.01E-04	2.50E-06		**5E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	7.00E-01	Y	2.10E-02	---	1.00E+02	**2E-04**	**---**	1.80E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.00E-01	Y	3.01E-03	---	4.00E+01	**8E-05**	**---**	2.58E-04	2.60E-07		**7E-11**
TRICHLOROETHENE	79-01-6	1.35E+00	N	4.06E-02	---	2.00E+00	**2E-02**	**---**	3.48E-03	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0026H**	**Total Inhalation**	**3E-02**	**0E+00**	**1E-07**
		Based on NDs only	**3E-02**	**0E+00**	**7E-08**
		Based on Detects only	**1E-03**	**All ND**	**3E-08**
		Site-related only	**2E-02**	**0E+00**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0026H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.35E+00	1.16E-02	6.96E-03	---	---	1.0E-06	kidney	1E-08	7E-09	---	---	**2E-08**
TRICHLOROETHENE	79-01-6	1.35E+00	3.48E-03		---		3.1E-06	NHL+liver	1E-08		---		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0027H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0027H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0027H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0029H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0029H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0029H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0030H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	5.53E-01	N	1.66E-02	---	2.00E+00	**8E-03**	**---**	1.42E-03	3.00E-05		**4E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	**---**	**---**	---	5.00E-06		**---**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.01E+00	N	3.04E-02	---	7.00E+00	**4E-03**	**---**	2.61E-03	2.60E-05		**7E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	6.71E-01	Y	2.02E-02	---	3.00E+01	**7E-04**	**---**	1.73E-03	7.80E-06		**1E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	1.57E+00	N	4.73E-02	---	1.00E+02	**5E-04**	**---**	4.05E-03	6.00E-06		**2E-08**
CHLOROFORM	67-66-3	1.22E+00	N	3.67E-02	---	9.77E+01	**4E-04**	**---**	3.14E-03	2.30E-05		**7E-08**
ETHYL ACETATE	141-78-6	1.80E+00	N	5.41E-02	---	7.00E+01	**8E-04**	**---**	4.64E-03	-		**---**
ETHYLBENZENE	100-41-4	1.10E+00	N	3.31E-02	---	1.00E+03	**3E-05**	**---**	2.83E-03	2.50E-06		**7E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.00E+00	Y	3.01E-02	---	1.00E+02	**3E-04**	**---**	2.58E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.70E+00	N	5.11E-02	---	4.00E+01	**1E-03**	**---**	4.38E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	1.35E+00	N	4.06E-02	---	2.00E+00	**2E-02**	**---**	3.48E-03	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0030H**	**Total Inhalation**	**4E-02**	**0E+00**	**3E-07**
		Based on NDs only	**4E-02**	**0E+00**	**2E-07**
		Based on Detects only	**1E-03**	**All ND**	**1E-08**
		Site-related only	**2E-02**	**0E+00**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0030H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.35E+00	1.16E-02	6.96E-03	---	---	1.0E-06	kidney	1E-08	7E-09	---	---	**2E-08**
TRICHLOROETHENE	79-01-6	1.35E+00	3.48E-03		---		3.1E-06	NHL+liver	1E-08		---		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0037H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.40E-01	Y	4.21E-03	---	2.00E+00	**2E-03**	**---**	3.61E-04	3.00E-05		**1E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.70E-01	N	1.11E-02	---	3.00E+01	**4E-04**	**---**	9.53E-04	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	3.31E-03	---	7.00E+00	**5E-04**	**---**	2.83E-04	2.60E-05		**7E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	9.60E-01	Y	2.89E-02	---	3.00E+01	**1E-03**	**---**	2.47E-03	7.80E-06		**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	1.26E-02	---	1.00E+02	**1E-04**	**---**	1.08E-03	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	2.70E-01	Y	8.12E-03	---	9.77E+01	**8E-05**	**---**	6.96E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	9.30E-01	Y	2.80E-02	---	1.00E+03	**3E-05**	**---**	2.40E-03	2.50E-06		**6E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.80E+00	Y	5.41E-02	---	1.00E+02	**5E-04**	**---**	4.64E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	5.30E-01	Y	1.59E-02	---	4.00E+01	**4E-04**	**---**	1.37E-03	2.60E-07		**4E-10**
TRICHLOROETHENE	79-01-6	1.50E-01	Y	4.51E-03	---	2.00E+00	**2E-03**	**---**	3.86E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0037H**	**Total Inhalation**	**7E-03**	**0E+00**	**7E-08**
		Based on NDs only	**4E-04**	**0E+00**	**5E-09**
		Based on Detects only	**7E-03**	**All ND**	**7E-08**
		Site-related only	**3E-03**	**0E+00**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0037H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.50E-01	1.29E-03	7.73E-04	---	---	1.0E-06	kidney	1E-09	8E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	1.50E-01	3.86E-04		---		3.1E-06	NHL+liver	1E-09		---		**1E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0040H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0040H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0040H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0041H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0041H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0041H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0045S**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0045S**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0045S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0047H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0047H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0047H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0050H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0050H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0050H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0051H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.00E-01	N	6.01E-03	---	2.00E+00	**3E-03**	**---**	5.15E-04	3.00E-05		**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	4.20E-01	Y	1.26E-02	---	3.00E+01	**4E-04**	**---**	1.08E-03	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	6.30E-02	Y	1.89E-03	---	7.00E+00	**3E-04**	**---**	1.62E-04	2.60E-05		**4E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.30E-01	Y	1.59E-02	---	3.00E+01	**5E-04**	**---**	1.37E-03	7.80E-06		**1E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	1.38E-02	---	1.00E+02	**1E-04**	**---**	1.19E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	1.60E-01	Y	4.81E-03	---	9.77E+01	**5E-05**	**---**	4.12E-04	2.30E-05		**9E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.30E-01	Y	3.91E-03	---	1.00E+03	**4E-06**	**---**	3.35E-04	2.50E-06		**8E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	5.50E-01	Y	1.65E-02	---	1.00E+02	**2E-04**	**---**	1.42E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	2.00E-01	Y	6.01E-03	---	4.00E+01	**2E-04**	**---**	5.15E-04	2.60E-07		**1E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	**---**	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0051H**	**Total Inhalation**	**8E-03**	**0E+00**	**6E-08**
		Based on NDs only	**7E-03**	**0E+00**	**2E-08**
		Based on Detects only	**2E-03**	**All ND**	**4E-08**
		Site-related only	**4E-03**	**0E+00**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0051H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0052H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0052H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0052H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0053H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0053H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0053H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0054H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0054H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0054H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0055H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0055H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0055H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0056H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0056H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0056H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0058H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0058H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0058H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0059H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.20E-01	N	6.61E-03	---	2.00E+00	**3E-03**	**---**	5.67E-04	3.00E-05		**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.60E-01	N	1.08E-02	---	3.00E+01	**4E-04**	**---**	9.28E-04	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	9.20E-02	Y	2.77E-03	---	7.00E+00	**4E-04**	**---**	2.37E-04	2.60E-05		**6E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	8.30E-01	Y	2.50E-02	---	3.00E+01	**8E-04**	**---**	2.14E-03	7.80E-06		**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	1.26E-02	---	1.00E+02	**1E-04**	**---**	1.08E-03	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	1.00E-01	N	3.01E-03	---	9.77E+01	**3E-05**	**---**	2.58E-04	2.30E-05		**6E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	5.40E-01	Y	1.62E-02	---	1.00E+03	**2E-05**	**---**	1.39E-03	2.50E-06		**3E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.10E+00	Y	3.31E-02	---	1.00E+02	**3E-04**	**---**	2.83E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	3.50E-01	Y	1.05E-02	---	4.00E+01	**3E-04**	**---**	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	**---**	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0059H**	**Total Inhalation**	**9E-03**	**0E+00**	**7E-08**
		Based on NDs only	**7E-03**	**0E+00**	**3E-08**
		Based on Detects only	**2E-03**	**All ND**	**3E-08**
		Site-related only	**4E-03**	**0E+00**	**1E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0059H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0060H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0060H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0060H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0061H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0061H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0061H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0062H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0062H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0062H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0063H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.05E-02	---	4.00E+01	**3E-04**	---	9.02E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	7.52E-03	---	2.00E+00	**4E-03**	---	6.44E-04	4.10E-06	M	**5E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0063H**	**Total Inhalation**	**4E-03**	**0E+00**	**6E-09**
		Based on NDs only	**4E-03**	**0E+00**	**6E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**4E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0063H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	2.15E-03	1.29E-03	---	---	1.0E-06	kidney	2E-09	1E-09	---	---	**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	6.44E-04		---		3.1E-06	NHL+liver	2E-09		---		**2E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0064H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.70E-01	N	5.11E-03	---	2.00E+00	**3E-03**	**---**	4.38E-04	3.00E-05		**1E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	2.80E-01	N	8.42E-03	---	3.00E+01	**3E-04**	**---**	7.21E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	9.90E-02	Y	2.98E-03	---	7.00E+00	**4E-04**	**---**	2.55E-04	2.60E-05		**7E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	4.60E-01	Y	1.38E-02	---	3.00E+01	**5E-04**	**---**	1.19E-03	7.80E-06		**9E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	1.20E-02	---	1.00E+02	**1E-04**	**---**	1.03E-03	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	8.90E-02	Y	2.68E-03	---	9.77E+01	**3E-05**	**---**	2.29E-04	2.30E-05		**5E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	7.40E-01	Y	2.22E-02	---	1.00E+03	**2E-05**	**---**	1.91E-03	2.50E-06		**5E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	3.10E+00	Y	9.32E-02	---	1.00E+02	**9E-04**	**---**	7.99E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	5.10E-01	Y	1.53E-02	---	4.00E+01	**4E-04**	**---**	1.31E-03	2.60E-07		**3E-10**
TRICHLOROETHENE	79-01-6	3.40E-02	Y	1.02E-03	---	2.00E+00	**5E-04**	**---**	8.76E-05	4.10E-06	M	**7E-10**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0064H**	**Total Inhalation**	**6E-03**	**0E+00**	**5E-08**
		Based on NDs only	**3E-03**	**0E+00**	**2E-08**
		Based on Detects only	**3E-03**	**All ND**	**3E-08**
		Site-related only	**1E-03**	**0E+00**	**5E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0064H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	3.40E-02	2.92E-04	1.75E-04	---	---	1.0E-06	kidney	3E-10	2E-10	---	---	**5E-10**
TRICHLOROETHENE	79-01-6	3.40E-02	8.76E-05		---		3.1E-06	NHL+liver	3E-10		---		**3E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0065H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.15E-01	N	6.46E-03	---	2.00E+00	**3E-03**	**---**	5.54E-04	3.00E-05		**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.55E-01	N	1.07E-02	---	3.00E+01	**4E-04**	**---**	9.15E-04	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	7.00E-02	Y	2.10E-03	---	7.00E+00	**3E-04**	**---**	1.80E-04	2.60E-05		**5E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	7.60E-01	Y	2.28E-02	---	3.00E+01	**8E-04**	**---**	1.96E-03	7.80E-06		**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	1.23E-02	---	1.00E+02	**1E-04**	**---**	1.06E-03	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	9.50E-02	N	2.86E-03	---	9.77E+01	**3E-05**	**---**	2.45E-04	2.30E-05		**6E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.70E-01	Y	8.12E-03	---	1.00E+03	**8E-06**	**---**	6.96E-04	2.50E-06		**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.00E+00	Y	3.01E-02	---	1.00E+02	**3E-04**	**---**	2.58E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	8.30E-02	Y	2.50E-03	---	4.00E+01	**6E-05**	**---**	2.14E-04	2.60E-07		**6E-11**
TRICHLOROETHENE	79-01-6	1.05E-01	N	3.16E-03	---	2.00E+00	**2E-03**	**---**	2.71E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0065H**	**Total Inhalation**	**7E-03**	**0E+00**	**6E-08**
		Based on NDs only	**5E-03**	**0E+00**	**3E-08**
		Based on Detects only	**2E-03**	**All ND**	**3E-08**
		Site-related only	**2E-03**	**0E+00**	**7E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0065H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.05E-01	9.02E-04	5.41E-04	---	---	1.0E-06	kidney	9E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	1.05E-01	2.71E-04		---		3.1E-06	NHL+liver	8E-10		---		**8E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0066H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.95E-01	N	5.86E-03	---	2.00E+00	**3E-03**	**---**	5.02E-04	3.00E-05		**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.15E-01	N	9.47E-03	---	3.00E+01	**3E-04**	**---**	8.12E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.30E-01	Y	3.91E-03	---	7.00E+00	**6E-04**	**---**	3.35E-04	2.60E-05		**9E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	6.80E-01	Y	2.04E-02	---	3.00E+01	**7E-04**	**---**	1.75E-03	7.80E-06		**1E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	1.29E-02	---	1.00E+02	**1E-04**	**---**	1.11E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	1.10E-01	Y	3.31E-03	---	9.77E+01	**3E-05**	**---**	2.83E-04	2.30E-05		**7E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	3.40E+00	Y	1.02E-01	---	1.00E+03	**1E-04**	**---**	8.76E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	8.00E+00	Y	2.40E-01	---	1.00E+02	**2E-03**	**---**	2.06E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	9.90E-02	Y	2.98E-03	---	4.00E+01	**7E-05**	**---**	2.55E-04	2.60E-07		**7E-11**
TRICHLOROETHENE	79-01-6	9.50E-02	N	2.86E-03	---	2.00E+00	**1E-03**	**---**	2.45E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0066H**	**Total Inhalation**	**9E-03**	**0E+00**	**8E-08**
		Based on NDs only	**5E-03**	**0E+00**	**2E-08**
		Based on Detects only	**4E-03**	**All ND**	**6E-08**
		Site-related only	**2E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0066H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	8.16E-04	4.90E-04	---	---	1.0E-06	kidney	8E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	2.45E-04		---		3.1E-06	NHL+liver	8E-10		---		**8E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0071H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.30E-01	N	6.91E-03	---	2.00E+00	**3E-03**	**---**	5.93E-04	3.00E-05		**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.70E-01	N	1.11E-02	---	3.00E+01	**4E-04**	**---**	9.53E-04	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	5.60E-02	Y	1.68E-03	---	7.00E+00	**2E-04**	**---**	1.44E-04	2.60E-05		**4E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.00E-01	Y	1.50E-02	---	3.00E+01	**5E-04**	**---**	1.29E-03	7.80E-06		**1E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	1.29E-02	---	1.00E+02	**1E-04**	**---**	1.11E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	1.10E-01	Y	3.31E-03	---	9.77E+01	**3E-05**	**---**	2.83E-04	2.30E-05		**7E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.10E-01	Y	3.31E-03	---	1.00E+03	**3E-06**	**---**	2.83E-04	2.50E-06		**7E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	3.90E-01	Y	1.17E-02	---	1.00E+02	**1E-04**	**---**	1.00E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.70E-01	Y	5.11E-03	---	4.00E+01	**1E-04**	**---**	4.38E-04	2.60E-07		**1E-10**
TRICHLOROETHENE	79-01-6	1.10E-01	N	3.31E-03	---	2.00E+00	**2E-03**	**---**	2.83E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0071H**	**Total Inhalation**	**7E-03**	**0E+00**	**5E-08**
		Based on NDs only	**5E-03**	**0E+00**	**2E-08**
		Based on Detects only	**1E-03**	**All ND**	**3E-08**
		Site-related only	**2E-03**	**0E+00**	**7E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0071H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.10E-01	9.45E-04	5.67E-04	---	---	1.0E-06	kidney	9E-10	6E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	1.10E-01	2.83E-04		---		3.1E-06	NHL+liver	9E-10		---		**9E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0076H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.00E-01	N	6.01E-03	---	2.00E+00	**3E-03**	**---**	5.15E-04	3.00E-05		**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.30E-01	N	9.92E-03	---	3.00E+01	**3E-04**	**---**	8.50E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	6.70E-02	Y	2.01E-03	---	7.00E+00	**3E-04**	**---**	1.73E-04	2.60E-05		**4E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.30E-01	Y	1.59E-02	---	3.00E+01	**5E-04**	**---**	1.37E-03	7.80E-06		**1E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	1.41E-02	---	1.00E+02	**1E-04**	**---**	1.21E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	8.20E-02	Y	2.46E-03	---	9.77E+01	**3E-05**	**---**	2.11E-04	2.30E-05		**5E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	8.30E-02	Y	2.50E-03	---	1.00E+03	**2E-06**	**---**	2.14E-04	2.50E-06		**5E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	3.00E-01	Y	9.02E-03	---	1.00E+02	**9E-05**	**---**	7.73E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.25E-01	N	3.76E-03	---	4.00E+01	**9E-05**	**---**	3.22E-04	2.60E-07		**8E-11**
TRICHLOROETHENE	79-01-6	1.00E-01	N	3.01E-03	---	2.00E+00	**2E-03**	**---**	2.58E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0076H**	**Total Inhalation**	**6E-03**	**0E+00**	**5E-08**
		Based on NDs only	**5E-03**	**0E+00**	**2E-08**
		Based on Detects only	**1E-03**	**All ND**	**3E-08**
		Site-related only	**2E-03**	**0E+00**	**7E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0076H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.00E-01	8.59E-04	5.15E-04	---	---	1.0E-06	kidney	9E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	2.58E-04		---		3.1E-06	NHL+liver	8E-10		---		**8E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0091H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.05E-01	N	6.16E-03	---	2.00E+00	**3E-03**	**---**	5.28E-04	3.00E-05		**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	4.40E-01	Y	1.32E-02	---	3.00E+01	**4E-04**	**---**	1.13E-03	5.00E-06		**6E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	4.00E-02	Y	1.20E-03	---	7.00E+00	**2E-04**	**---**	1.03E-04	2.60E-05		**3E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	6.80E-01	Y	2.04E-02	---	3.00E+01	**7E-04**	**---**	1.75E-03	7.80E-06		**1E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	1.38E-02	---	1.00E+02	**1E-04**	**---**	1.19E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	3.30E-01	Y	9.92E-03	---	9.77E+01	**1E-04**	**---**	8.50E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.10E-01	Y	6.31E-03	---	1.00E+03	**6E-06**	**---**	5.41E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	8.00E-01	Y	2.40E-02	---	1.00E+02	**2E-04**	**---**	2.06E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.90E-01	Y	5.71E-03	---	4.00E+01	**1E-04**	**---**	4.90E-04	2.60E-07		**1E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	N	3.01E-03	---	2.00E+00	**2E-03**	**---**	2.58E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0091H**	**Total Inhalation**	**7E-03**	**0E+00**	**7E-08**
		Based on NDs only	**5E-03**	**0E+00**	**2E-08**
		Based on Detects only	**2E-03**	**All ND**	**5E-08**
		Site-related only	**2E-03**	**0E+00**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0091H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	8.59E-04	5.15E-04	---	---	1.0E-06	kidney	9E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	2.58E-04		---		3.1E-06	NHL+liver	8E-10		---		**8E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0098H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.10E-01	N	6.31E-03	---	2.00E+00	**3E-03**	**---**	5.41E-04	3.00E-05		**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.45E-01	N	1.04E-02	---	3.00E+01	**3E-04**	**---**	8.89E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	4.21E-03	---	7.00E+00	**6E-04**	**---**	3.61E-04	2.60E-05		**9E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	7.60E-01	Y	2.28E-02	---	3.00E+01	**8E-04**	**---**	1.96E-03	7.80E-06		**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	1.35E-02	---	1.00E+02	**1E-04**	**---**	1.16E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	1.30E-01	Y	3.91E-03	---	9.77E+01	**4E-05**	**---**	3.35E-04	2.30E-05		**8E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	3.40E+00	Y	1.02E-01	---	1.00E+03	**1E-04**	**---**	8.76E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	7.90E+00	Y	2.37E-01	---	1.00E+02	**2E-03**	**---**	2.04E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.30E-01	Y	3.91E-03	---	4.00E+01	**1E-04**	**---**	3.35E-04	2.60E-07		**9E-11**
TRICHLOROETHENE	79-01-6	1.00E-01	N	3.01E-03	---	2.00E+00	**2E-03**	**---**	2.58E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0098H**	**Total Inhalation**	**9E-03**	**0E+00**	**8E-08**
		Based on NDs only	**5E-03**	**0E+00**	**2E-08**
		Based on Detects only	**4E-03**	**All ND**	**6E-08**
		Site-related only	**2E-03**	**0E+00**	**7E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0098H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.00E-01	8.59E-04	5.15E-04	---	---	1.0E-06	kidney	9E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	2.58E-04		---		3.1E-06	NHL+liver	8E-10		---		**8E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0102H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.85E-01	N	5.56E-03	---	2.00E+00	**3E-03**	**---**	4.77E-04	3.00E-05		**1E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.00E-01	N	9.02E-03	---	3.00E+01	**3E-04**	**---**	7.73E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	7.00E-02	N	2.10E-03	---	7.00E+00	**3E-04**	**---**	1.80E-04	2.60E-05		**5E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	3.60E-01	Y	1.08E-02	---	3.00E+01	**4E-04**	**---**	9.28E-04	7.80E-06		**7E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	1.35E-02	---	1.00E+02	**1E-04**	**---**	1.16E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	3.30E-01	Y	9.92E-03	---	9.77E+01	**1E-04**	**---**	8.50E-04	2.30E-05		**2E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	7.00E-02	N	2.10E-03	---	1.00E+03	**2E-06**	**---**	1.80E-04	2.50E-06		**5E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	3.50E-01	Y	1.05E-02	---	1.00E+02	**1E-04**	**---**	9.02E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.15E-01	N	3.46E-03	---	4.00E+01	**9E-05**	**---**	2.96E-04	2.60E-07		**8E-11**
TRICHLOROETHENE	79-01-6	9.00E-02	N	2.71E-03	---	2.00E+00	**1E-03**	**---**	2.32E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0102H**	**Total Inhalation**	**6E-03**	**0E+00**	**6E-08**
		Based on NDs only	**5E-03**	**0E+00**	**3E-08**
		Based on Detects only	**7E-04**	**All ND**	**3E-08**
		Site-related only	**2E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0102H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.00E-02	7.73E-04	4.64E-04	---	---	1.0E-06	kidney	8E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	2.32E-04		---		3.1E-06	NHL+liver	7E-10		---		**7E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0118H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.10E-01	N	6.31E-03	---	2.00E+00	**3E-03**	**---**	5.41E-04	3.00E-05		**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.45E-01	N	1.04E-02	---	3.00E+01	**3E-04**	**---**	8.89E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	7.50E-02	N	2.25E-03	---	7.00E+00	**3E-04**	**---**	1.93E-04	2.60E-05		**5E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.30E-01	Y	1.59E-02	---	3.00E+01	**5E-04**	**---**	1.37E-03	7.80E-06		**1E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	1.32E-02	---	1.00E+02	**1E-04**	**---**	1.13E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	9.40E-02	Y	2.83E-03	---	9.77E+01	**3E-05**	**---**	2.42E-04	2.30E-05		**6E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.20E-01	Y	3.61E-03	---	1.00E+03	**4E-06**	**---**	3.09E-04	2.50E-06		**8E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	4.50E-01	Y	1.35E-02	---	1.00E+02	**1E-04**	**---**	1.16E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.40E-01	Y	4.21E-03	---	4.00E+01	**1E-04**	**---**	3.61E-04	2.60E-07		**9E-11**
TRICHLOROETHENE	79-01-6	1.00E-01	N	3.01E-03	---	2.00E+00	**2E-03**	**---**	2.58E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0118H**	**Total Inhalation**	**6E-03**	**0E+00**	**5E-08**
		Based on NDs only	**5E-03**	**0E+00**	**3E-08**
		Based on Detects only	**9E-04**	**All ND**	**2E-08**
		Site-related only	**2E-03**	**0E+00**	**7E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0118H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	8.59E-04	5.15E-04	---	---	1.0E-06	kidney	9E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	2.58E-04		---		3.1E-06	NHL+liver	8E-10		---		**8E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0121H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.90E-01	N	5.71E-03	---	2.00E+00	**3E-03**	**---**	4.90E-04	3.00E-05		**1E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.15E-01	N	9.47E-03	---	3.00E+01	**3E-04**	**---**	8.12E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.50E-01	Y	4.51E-03	---	7.00E+00	**6E-04**	**---**	3.86E-04	2.60E-05		**1E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	8.50E-01	Y	2.56E-02	---	3.00E+01	**9E-04**	**---**	2.19E-03	7.80E-06		**2E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.60E-01	Y	1.08E-02	---	1.00E+02	**1E-04**	**---**	9.28E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	1.20E-01	Y	3.61E-03	---	9.77E+01	**4E-05**	**---**	3.09E-04	2.30E-05		**7E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.40E+00	Y	7.21E-02	---	1.00E+03	**7E-05**	**---**	6.18E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	5.10E+00	Y	1.53E-01	---	1.00E+02	**2E-03**	**---**	1.31E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.40E-01	Y	4.21E-03	---	4.00E+01	**1E-04**	**---**	3.61E-04	2.60E-07		**9E-11**
TRICHLOROETHENE	79-01-6	9.50E-02	N	2.86E-03	---	2.00E+00	**1E-03**	**---**	2.45E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0121H**	**Total Inhalation**	**8E-03**	**0E+00**	**8E-08**
		Based on NDs only	**5E-03**	**0E+00**	**2E-08**
		Based on Detects only	**3E-03**	**All ND**	**6E-08**
		Site-related only	**2E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0121H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	8.16E-04	4.90E-04	---	---	1.0E-06	kidney	8E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	2.45E-04		---		3.1E-06	NHL+liver	8E-10		---		**8E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0122H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.00E-01	N	6.01E-03	---	2.00E+00	**3E-03**	**---**	5.15E-04	3.00E-05		**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.30E-01	N	9.92E-03	---	3.00E+01	**3E-04**	**---**	8.50E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	6.20E-02	Y	1.86E-03	---	7.00E+00	**3E-04**	**---**	1.60E-04	2.60E-05		**4E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	7.00E-01	Y	2.10E-02	---	3.00E+01	**7E-04**	**---**	1.80E-03	7.80E-06		**1E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	1.35E-02	---	1.00E+02	**1E-04**	**---**	1.16E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	9.80E-02	Y	2.95E-03	---	9.77E+01	**3E-05**	**---**	2.53E-04	2.30E-05		**6E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.50E+00	Y	7.52E-02	---	1.00E+03	**8E-05**	**---**	6.44E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	7.20E+00	Y	2.16E-01	---	1.00E+02	**2E-03**	**---**	1.86E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.80E-01	Y	5.41E-03	---	4.00E+01	**1E-04**	**---**	4.64E-04	2.60E-07		**1E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	N	3.01E-03	---	2.00E+00	**2E-03**	**---**	2.58E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0122H**	**Total Inhalation**	**8E-03**	**0E+00**	**7E-08**
		Based on NDs only	**5E-03**	**0E+00**	**2E-08**
		Based on Detects only	**4E-03**	**All ND**	**5E-08**
		Site-related only	**2E-03**	**0E+00**	**7E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0122H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.00E-01	8.59E-04	5.15E-04	---	---	1.0E-06	kidney	9E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	2.58E-04		---		3.1E-06	NHL+liver	8E-10		---		**8E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0135H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.90E-01	N	5.71E-03	---	2.00E+00	**3E-03**	**---**	4.90E-04	3.00E-05		**1E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.10E-01	N	9.32E-03	---	3.00E+01	**3E-04**	**---**	7.99E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	7.00E-02	N	2.10E-03	---	7.00E+00	**3E-04**	**---**	1.80E-04	2.60E-05		**5E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.80E-01	Y	1.74E-02	---	3.00E+01	**6E-04**	**---**	1.49E-03	7.80E-06		**1E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	1.38E-02	---	1.00E+02	**1E-04**	**---**	1.19E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	1.10E-01	Y	3.31E-03	---	9.77E+01	**3E-05**	**---**	2.83E-04	2.30E-05		**7E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.60E-01	Y	4.81E-03	---	1.00E+03	**5E-06**	**---**	4.12E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	5.20E-01	Y	1.56E-02	---	1.00E+02	**2E-04**	**---**	1.34E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.50E-01	Y	4.51E-03	---	4.00E+01	**1E-04**	**---**	3.86E-04	2.60E-07		**1E-10**
TRICHLOROETHENE	79-01-6	9.00E-02	N	2.71E-03	---	2.00E+00	**1E-03**	**---**	2.32E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0135H**	**Total Inhalation**	**6E-03**	**0E+00**	**5E-08**
		Based on NDs only	**5E-03**	**0E+00**	**3E-08**
		Based on Detects only	**1E-03**	**All ND**	**3E-08**
		Site-related only	**2E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0135H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.00E-02	7.73E-04	4.64E-04	---	---	1.0E-06	kidney	8E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	2.32E-04		---		3.1E-06	NHL+liver	7E-10		---		**7E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0139H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.30E-01	N	6.91E-03	---	2.00E+00	**3E-03**	**---**	5.93E-04	3.00E-05		**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.70E-01	N	1.11E-02	---	3.00E+01	**4E-04**	**---**	9.53E-04	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	6.10E-02	Y	1.83E-03	---	7.00E+00	**3E-04**	**---**	1.57E-04	2.60E-05		**4E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.10E-01	Y	1.53E-02	---	3.00E+01	**5E-04**	**---**	1.31E-03	7.80E-06		**1E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	1.20E-02	---	1.00E+02	**1E-04**	**---**	1.03E-03	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	7.70E-02	Y	2.31E-03	---	9.77E+01	**2E-05**	**---**	1.98E-04	2.30E-05		**5E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	8.00E-02	Y	2.40E-03	---	1.00E+03	**2E-06**	**---**	2.06E-04	2.50E-06		**5E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.90E-01	Y	8.72E-03	---	1.00E+02	**9E-05**	**---**	7.47E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.40E-01	N	4.21E-03	---	4.00E+01	**1E-04**	**---**	3.61E-04	2.60E-07		**9E-11**
TRICHLOROETHENE	79-01-6	1.10E-01	N	3.31E-03	---	2.00E+00	**2E-03**	**---**	2.83E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0139H**	**Total Inhalation**	**7E-03**	**0E+00**	**5E-08**
		Based on NDs only	**6E-03**	**0E+00**	**3E-08**
		Based on Detects only	**1E-03**	**All ND**	**3E-08**
		Site-related only	**2E-03**	**0E+00**	**7E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0139H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.10E-01	9.45E-04	5.67E-04	---	---	1.0E-06	kidney	9E-10	6E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	1.10E-01	2.83E-04		---		3.1E-06	NHL+liver	9E-10		---		**9E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0146H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.95E-01	N	5.86E-03	---	2.00E+00	**3E-03**	**---**	5.02E-04	3.00E-05		**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	1.80E-01	Y	5.41E-03	---	3.00E+01	**2E-04**	**---**	4.64E-04	5.00E-06		**2E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	5.50E-02	Y	1.65E-03	---	7.00E+00	**2E-04**	**---**	1.42E-04	2.60E-05		**4E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	4.20E-01	Y	1.26E-02	---	3.00E+01	**4E-04**	**---**	1.08E-03	7.80E-06		**8E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	1.26E-02	---	1.00E+02	**1E-04**	**---**	1.08E-03	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	7.60E-02	Y	2.28E-03	---	9.77E+01	**2E-05**	**---**	1.96E-04	2.30E-05		**5E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	7.10E-02	Y	2.13E-03	---	1.00E+03	**2E-06**	**---**	1.83E-04	2.50E-06		**5E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.40E-01	Y	7.21E-03	---	1.00E+02	**7E-05**	**---**	6.18E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.20E-01	N	3.61E-03	---	4.00E+01	**9E-05**	**---**	3.09E-04	2.60E-07		**8E-11**
TRICHLOROETHENE	79-01-6	9.50E-02	N	2.86E-03	---	2.00E+00	**1E-03**	**---**	2.45E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0146H**	**Total Inhalation**	**6E-03**	**0E+00**	**4E-08**
		Based on NDs only	**4E-03**	**0E+00**	**2E-08**
		Based on Detects only	**1E-03**	**All ND**	**3E-08**
		Site-related only	**2E-03**	**0E+00**	**4E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0146H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	8.16E-04	4.90E-04	---	---	1.0E-06	kidney	8E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	2.45E-04		---		3.1E-06	NHL+liver	8E-10		---		**8E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0148H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.05E-01	N	6.16E-03	---	2.00E+00	**3E-03**	**---**	5.28E-04	3.00E-05		**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	2.60E-01	Y	7.82E-03	---	3.00E+01	**3E-04**	**---**	6.70E-04	5.00E-06		**3E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	4.21E-03	---	7.00E+00	**6E-04**	**---**	3.61E-04	2.60E-05		**9E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	7.20E-01	Y	2.16E-02	---	3.00E+01	**7E-04**	**---**	1.86E-03	7.80E-06		**1E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	1.29E-02	---	1.00E+02	**1E-04**	**---**	1.11E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	1.30E-01	Y	3.91E-03	---	9.77E+01	**4E-05**	**---**	3.35E-04	2.30E-05		**8E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	3.80E+00	Y	1.14E-01	---	1.00E+03	**1E-04**	**---**	9.79E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	9.00E+00	Y	2.71E-01	---	1.00E+02	**3E-03**	**---**	2.32E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.50E-01	Y	4.51E-03	---	4.00E+01	**1E-04**	**---**	3.86E-04	2.60E-07		**1E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	N	3.01E-03	---	2.00E+00	**2E-03**	**---**	2.58E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0148H**	**Total Inhalation**	**9E-03**	**0E+00**	**8E-08**
		Based on NDs only	**5E-03**	**0E+00**	**2E-08**
		Based on Detects only	**5E-03**	**All ND**	**7E-08**
		Site-related only	**2E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0148H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.00E-01	8.59E-04	5.15E-04	---	---	1.0E-06	kidney	9E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	2.58E-04		---		3.1E-06	NHL+liver	8E-10		---		**8E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0153H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.05E-01	N	6.16E-03	---	2.00E+00	**3E-03**	**---**	5.28E-04	3.00E-05		**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	1.10E-01	Y	3.31E-03	---	3.00E+01	**1E-04**	**---**	2.83E-04	5.00E-06		**1E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	9.60E-02	Y	2.89E-03	---	7.00E+00	**4E-04**	**---**	2.47E-04	2.60E-05		**6E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	7.40E-01	Y	2.22E-02	---	3.00E+01	**7E-04**	**---**	1.91E-03	7.80E-06		**1E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	1.32E-02	---	1.00E+02	**1E-04**	**---**	1.13E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	1.20E-01	Y	3.61E-03	---	9.77E+01	**4E-05**	**---**	3.09E-04	2.30E-05		**7E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	4.70E+00	Y	1.41E-01	---	1.00E+03	**1E-04**	**---**	1.21E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.20E+01	Y	3.61E-01	---	1.00E+02	**4E-03**	**---**	3.09E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	2.00E-01	Y	6.01E-03	---	4.00E+01	**2E-04**	**---**	5.15E-04	2.60E-07		**1E-10**
TRICHLOROETHENE	79-01-6	1.00E-01	N	3.01E-03	---	2.00E+00	**2E-03**	**---**	2.58E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0153H**	**Total Inhalation**	**1E-02**	**0E+00**	**9E-08**
		Based on NDs only	**5E-03**	**0E+00**	**2E-08**
		Based on Detects only	**5E-03**	**All ND**	**7E-08**
		Site-related only	**2E-03**	**0E+00**	**4E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0153H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.00E-01	8.59E-04	5.15E-04	---	---	1.0E-06	kidney	9E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	2.58E-04		---		3.1E-06	NHL+liver	8E-10		---		**8E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0162H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.90E-01	N	5.71E-03	---	2.00E+00	**3E-03**	**---**	4.90E-04	3.00E-05		**1E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.10E-01	N	9.32E-03	---	3.00E+01	**3E-04**	**---**	7.99E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	6.80E-02	Y	2.04E-03	---	7.00E+00	**3E-04**	**---**	1.75E-04	2.60E-05		**5E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.10E-01	Y	1.53E-02	---	3.00E+01	**5E-04**	**---**	1.31E-03	7.80E-06		**1E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	1.29E-02	---	1.00E+02	**1E-04**	**---**	1.11E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	9.80E-02	Y	2.95E-03	---	9.77E+01	**3E-05**	**---**	2.53E-04	2.30E-05		**6E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.20E-01	Y	3.61E-03	---	1.00E+03	**4E-06**	**---**	3.09E-04	2.50E-06		**8E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	4.00E-01	Y	1.20E-02	---	1.00E+02	**1E-04**	**---**	1.03E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	2.70E-01	Y	8.12E-03	---	4.00E+01	**2E-04**	**---**	6.96E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	9.00E-02	N	2.71E-03	---	2.00E+00	**1E-03**	**---**	2.32E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0162H**	**Total Inhalation**	**6E-03**	**0E+00**	**5E-08**
		Based on NDs only	**5E-03**	**0E+00**	**2E-08**
		Based on Detects only	**1E-03**	**All ND**	**3E-08**
		Site-related only	**2E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0162H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.00E-02	7.73E-04	4.64E-04	---	---	1.0E-06	kidney	8E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	2.32E-04		---		3.1E-06	NHL+liver	7E-10		---		**7E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0173H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.00E-01	N	6.01E-03	---	2.00E+00	**3E-03**	**---**	5.15E-04	3.00E-05		**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.30E-01	N	9.92E-03	---	3.00E+01	**3E-04**	**---**	8.50E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	5.40E-02	Y	1.62E-03	---	7.00E+00	**2E-04**	**---**	1.39E-04	2.60E-05		**4E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.10E-01	Y	1.53E-02	---	3.00E+01	**5E-04**	**---**	1.31E-03	7.80E-06		**1E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	1.32E-02	---	1.00E+02	**1E-04**	**---**	1.13E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	7.20E-02	Y	2.16E-03	---	9.77E+01	**2E-05**	**---**	1.86E-04	2.30E-05		**4E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	7.10E-02	Y	2.13E-03	---	1.00E+03	**2E-06**	**---**	1.83E-04	2.50E-06		**5E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.50E-01	Y	7.52E-03	---	1.00E+02	**8E-05**	**---**	6.44E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.25E-01	N	3.76E-03	---	4.00E+01	**9E-05**	**---**	3.22E-04	2.60E-07		**8E-11**
TRICHLOROETHENE	79-01-6	1.00E-01	N	3.01E-03	---	2.00E+00	**2E-03**	**---**	2.58E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0173H**	**Total Inhalation**	**6E-03**	**0E+00**	**5E-08**
		Based on NDs only	**5E-03**	**0E+00**	**2E-08**
		Based on Detects only	**1E-03**	**All ND**	**3E-08**
		Site-related only	**2E-03**	**0E+00**	**7E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0173H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.00E-01	8.59E-04	5.15E-04	---	---	1.0E-06	kidney	9E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	2.58E-04		---		3.1E-06	NHL+liver	8E-10		---		**8E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0174H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.95E-01	N	5.86E-03	---	2.00E+00	**3E-03**	**---**	5.02E-04	3.00E-05		**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.15E-01	N	9.47E-03	---	3.00E+01	**3E-04**	**---**	8.12E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	5.50E-02	Y	1.65E-03	---	7.00E+00	**2E-04**	**---**	1.42E-04	2.60E-05		**4E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	4.10E-01	Y	1.23E-02	---	3.00E+01	**4E-04**	**---**	1.06E-03	7.80E-06		**8E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	1.32E-02	---	1.00E+02	**1E-04**	**---**	1.13E-03	6.00E-06		**7E-09**
CHLOROFORM	67-66-3	7.00E-02	Y	2.10E-03	---	9.77E+01	**2E-05**	**---**	1.80E-04	2.30E-05		**4E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	6.70E-02	Y	2.01E-03	---	1.00E+03	**2E-06**	**---**	1.73E-04	2.50E-06		**4E-10**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.30E-01	Y	6.91E-03	---	1.00E+02	**7E-05**	**---**	5.93E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.20E-01	N	3.61E-03	---	4.00E+01	**9E-05**	**---**	3.09E-04	2.60E-07		**8E-11**
TRICHLOROETHENE	79-01-6	9.50E-02	N	2.86E-03	---	2.00E+00	**1E-03**	**---**	2.45E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0174H**	**Total Inhalation**	**6E-03**	**0E+00**	**4E-08**
		Based on NDs only	**5E-03**	**0E+00**	**2E-08**
		Based on Detects only	**9E-04**	**All ND**	**2E-08**
		Site-related only	**2E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0174H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	8.16E-04	4.90E-04	---	---	1.0E-06	kidney	8E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	2.45E-04		---		3.1E-06	NHL+liver	8E-10		---		**8E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0302H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.65E-01	N	4.96E-03	---	2.00E+00	**2E-03**	**---**	4.25E-04	3.00E-05		**1E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	2.70E-01	N	8.12E-03	---	3.00E+01	**3E-04**	**---**	6.96E-04	5.00E-06		**3E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	9.70E-02	Y	2.92E-03	---	7.00E+00	**4E-04**	**---**	2.50E-04	2.60E-05		**6E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.40E-01	Y	1.62E-02	---	3.00E+01	**5E-04**	**---**	1.39E-03	7.80E-06		**1E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.20E-01	Y	9.62E-03	---	1.00E+02	**1E-04**	**---**	8.25E-04	6.00E-06		**5E-09**
CHLOROFORM	67-66-3	8.20E-02	Y	2.46E-03	---	9.77E+01	**3E-05**	**---**	2.11E-04	2.30E-05		**5E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	6.40E-01	Y	1.92E-02	---	1.00E+03	**2E-05**	**---**	1.65E-03	2.50E-06		**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.90E+00	Y	8.72E-02	---	1.00E+02	**9E-04**	**---**	7.47E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	3.70E-01	Y	1.11E-02	---	4.00E+01	**3E-04**	**---**	9.53E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	8.00E-02	N	2.40E-03	---	2.00E+00	**1E-03**	**---**	2.06E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0302H**	**Total Inhalation**	**6E-03**	**0E+00**	**5E-08**
		Based on NDs only	**4E-03**	**0E+00**	**2E-08**
		Based on Detects only	**2E-03**	**All ND**	**3E-08**
		Site-related only	**2E-03**	**0E+00**	**5E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0302H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	8.00E-02	6.87E-04	4.12E-04	---	---	1.0E-06	kidney	7E-10	4E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	8.00E-02	2.06E-04		---		3.1E-06	NHL+liver	6E-10		---		**6E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0334H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.22E+00	N	6.66E-02	---	2.00E+00	**3E-02**	**---**	5.71E-03	3.00E-05		**2E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.61E-01	N	1.08E-02	---	3.00E+01	**4E-04**	**---**	9.29E-04	5.00E-06		**5E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.03E-01	Y	3.10E-03	---	7.00E+00	**4E-04**	**---**	2.65E-04	2.60E-05		**7E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	7.06E-01	Y	2.12E-02	---	3.00E+01	**7E-04**	**---**	1.82E-03	7.80E-06		**1E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.52E-01	Y	1.66E-02	---	1.00E+02	**2E-04**	**---**	1.42E-03	6.00E-06		**9E-09**
CHLOROFORM	67-66-3	4.87E-02	N	1.46E-03	---	9.77E+01	**1E-05**	**---**	1.25E-04	2.30E-05		**3E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	9.84E-01	Y	2.96E-02	---	1.00E+03	**3E-05**	**---**	2.54E-03	2.50E-06		**6E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	3.67E+00	Y	1.10E-01	---	1.00E+02	**1E-03**	**---**	9.46E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	3.74E-01	Y	1.12E-02	---	4.00E+01	**3E-04**	**---**	9.64E-04	2.60E-07		**3E-10**
TRICHLOROETHENE	79-01-6	1.42E-01	Y	4.27E-03	---	2.00E+00	**2E-03**	**---**	3.66E-04	4.10E-06	M	**3E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0334H**	**Total Inhalation**	**4E-02**	**0E+00**	**2E-07**
		Based on NDs only	**3E-02**	**0E+00**	**2E-07**
		Based on Detects only	**5E-03**	**All ND**	**4E-08**
		Site-related only	**3E-03**	**0E+00**	**8E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0334H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.42E-01	1.22E-03	7.32E-04	---	---	1.0E-06	kidney	1E-09	7E-10	---	---	**2E-09**
TRICHLOROETHENE	79-01-6	1.42E-01	3.66E-04		---		3.1E-06	NHL+liver	1E-09		---		**1E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**365S**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.95E-01	N	5.86E-03	---	2.00E+00	**3E-03**	**---**	5.02E-04	3.00E-05		**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.15E-01	N	9.47E-03	---	3.00E+01	**3E-04**	**---**	8.12E-04	5.00E-06		**4E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	7.20E-02	Y	2.16E-03	---	7.00E+00	**3E-04**	**---**	1.86E-04	2.60E-05		**5E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	4.60E-01	Y	1.38E-02	---	3.00E+01	**5E-04**	**---**	1.19E-03	7.80E-06		**9E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	1.14E-02	---	1.00E+02	**1E-04**	**---**	9.79E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	9.00E-02	Y	2.71E-03	---	9.77E+01	**3E-05**	**---**	2.32E-04	2.30E-05		**5E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	3.90E-01	Y	1.17E-02	---	1.00E+03	**1E-05**	**---**	1.00E-03	2.50E-06		**3E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.90E+00	Y	5.71E-02	---	1.00E+02	**6E-04**	**---**	4.90E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	2.10E-01	Y	6.31E-03	---	4.00E+01	**2E-04**	**---**	5.41E-04	2.60E-07		**1E-10**
TRICHLOROETHENE	79-01-6	9.50E-02	N	2.86E-03	---	2.00E+00	**1E-03**	**---**	2.45E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**365S**	**Total Inhalation**	**6E-03**	**0E+00**	**5E-08**
		Based on NDs only	**5E-03**	**0E+00**	**2E-08**
		Based on Detects only	**2E-03**	**All ND**	**3E-08**
		Site-related only	**2E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**365S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	8.16E-04	4.90E-04	---	---	1.0E-06	kidney	8E-10	5E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	2.45E-04		---		3.1E-06	NHL+liver	8E-10		---		**8E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**0381H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.65E-01	N	4.96E-03	---	2.00E+00	**2E-03**	**---**	4.25E-04	3.00E-05		**1E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	1.50E-01	Y	4.51E-03	---	3.00E+01	**2E-04**	**---**	3.86E-04	5.00E-06		**2E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	2.31E-03	---	7.00E+00	**3E-04**	**---**	1.98E-04	2.60E-05		**5E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	4.30E-01	Y	1.29E-02	---	3.00E+01	**4E-04**	**---**	1.11E-03	7.80E-06		**9E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.70E-01	Y	1.11E-02	---	1.00E+02	**1E-04**	**---**	9.53E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	9.50E-02	Y	2.86E-03	---	9.77E+01	**3E-05**	**---**	2.45E-04	2.30E-05		**6E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.80E-01	Y	8.42E-03	---	1.00E+03	**8E-06**	**---**	7.21E-04	2.50E-06		**2E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.20E+00	Y	3.61E-02	---	1.00E+02	**4E-04**	**---**	3.09E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.90E-01	Y	5.71E-03	---	4.00E+01	**1E-04**	**---**	4.90E-04	2.60E-07		**1E-10**
TRICHLOROETHENE	79-01-6	8.00E-02	N	2.40E-03	---	2.00E+00	**1E-03**	**---**	2.06E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**0381H**	**Total Inhalation**	**5E-03**	**0E+00**	**4E-08**
		Based on NDs only	**4E-03**	**0E+00**	**1E-08**
		Based on Detects only	**2E-03**	**All ND**	**3E-08**
		Site-related only	**1E-03**	**0E+00**	**4E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**0381H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	8.00E-02	6.87E-04	4.12E-04	---	---	1.0E-06	kidney	7E-10	4E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	8.00E-02	2.06E-04		---		3.1E-06	NHL+liver	6E-10		---		**6E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**B32**

Pathway:
Inhalation of Outdoor Air

		RME child	RME adult		RME lifetime
TWFnc (unitless)		3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.65E-01	N	4.96E-03	---	2.00E+00	**2E-03**	**---**	4.25E-04	3.00E-05		**1E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	2.70E-01	N	8.12E-03	---	3.00E+01	**3E-04**	**---**	6.96E-04	5.00E-06		**3E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	7.40E-02	Y	2.22E-03	---	7.00E+00	**3E-04**	**---**	1.91E-04	2.60E-05		**5E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	4.90E-01	Y	1.47E-02	---	3.00E+01	**5E-04**	**---**	1.26E-03	7.80E-06		**1E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	6.90E-01	Y	2.07E-02	---	1.00E+02	**2E-04**	**---**	1.78E-03	6.00E-06		**1E-08**
CHLOROFORM	67-66-3	9.00E-02	Y	2.71E-03	---	9.77E+01	**3E-05**	**---**	2.32E-04	2.30E-05		**5E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	7.80E-01	Y	2.34E-02	---	1.00E+03	**2E-05**	**---**	2.01E-03	2.50E-06		**5E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	3.60E+00	Y	1.08E-01	---	1.00E+02	**1E-03**	**---**	9.28E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	4.30E-01	Y	1.29E-02	---	4.00E+01	**3E-04**	**---**	1.11E-03	2.60E-07		**3E-10**
TRICHLOROETHENE	79-01-6	8.00E-02	N	2.40E-03	---	2.00E+00	**1E-03**	**---**	2.06E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**B32**	**Total Inhalation**	**6E-03**	**0E+00**	**5E-08**
		Based on NDs only	**4E-03**	**0E+00**	**2E-08**
		Based on Detects only	**2E-03**	**All ND**	**4E-08**
		Site-related only	**2E-03**	**0E+00**	**6E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**B32**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	8.00E-02	6.87E-04	4.12E-04	---	---	1.0E-06	kidney	7E-10	4E-10	---	---	**1E-09**
TRICHLOROETHENE	79-01-6	8.00E-02	2.06E-04		---		3.1E-06	NHL+liver	6E-10		---		**6E-10**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**building 6**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	5.00E-01	N	1.50E-02	---	2.00E+00	**8E-03**	**---**	1.29E-03	3.00E-05		**4E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	7.40E-01	Y	2.22E-02	---	3.00E+01	**7E-04**	**---**	1.91E-03	5.00E-06		**1E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	5.00E-01	N	1.50E-02	---	7.00E+00	**2E-03**	**---**	1.29E-03	2.60E-05		**3E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	3.60E-01	Y	1.08E-02	---	3.00E+01	**4E-04**	**---**	9.28E-04	7.80E-06		**7E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.90E-01	Y	1.47E-02	---	1.00E+02	**1E-04**	**---**	1.26E-03	6.00E-06		**8E-09**
CHLOROFORM	67-66-3	2.40E-01	Y	7.21E-03	---	9.77E+01	**7E-05**	**---**	6.18E-04	2.30E-05		**1E-08**
ETHYL ACETATE	141-78-6	8.90E+00	Y	2.68E-01	---	7.00E+01	**4E-03**	**---**	2.29E-02	-		**---**
ETHYLBENZENE	100-41-4	1.80E-01	Y	5.41E-03	---	1.00E+03	**5E-06**	**---**	4.64E-04	2.50E-06		**1E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	7.10E-01	Y	2.13E-02	---	1.00E+02	**2E-04**	**---**	1.83E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	8.31E+00	Y	2.50E-01	---	4.00E+01	**6E-03**	**---**	2.14E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	5.00E-01	N	1.50E-02	---	2.00E+00	**8E-03**	**---**	1.29E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**building 6**	**Total Inhalation**	**3E-02**	**0E+00**	**1E-07**
		Based on NDs only	**2E-02**	**0E+00**	**8E-08**
		Based on Detects only	**1E-02**	**All ND**	**5E-08**
		Site-related only	**1E-02**	**0E+00**	**3E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**building 6**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-01	4.29E-03	2.58E-03	---	---	1.0E-06	kidney	4E-09	3E-09	---	---	**7E-09**
TRICHLOROETHENE	79-01-6	5.00E-01	1.29E-03		---		3.1E-06	NHL+liver	4E-09		---		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Daycare children**
Exposure Area:	**building 7**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	3.01E-02	#N/A	TWFc (unitless)	2.58E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	4.40E-01	N	1.32E-02	---	2.00E+00	**7E-03**	**---**	1.13E-03	3.00E-05		**3E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	4.50E-01	N	1.35E-02	---	3.00E+01	**5E-04**	**---**	1.16E-03	5.00E-06		**6E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	4.50E-01	N	1.35E-02	---	7.00E+00	**2E-03**	**---**	1.16E-03	2.60E-05		**3E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	2.00E-01	Y	6.01E-03	---	3.00E+01	**2E-04**	**---**	5.15E-04	7.80E-06		**4E-09**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.70E-01	Y	1.11E-02	---	1.00E+02	**1E-04**	**---**	9.53E-04	6.00E-06		**6E-09**
CHLOROFORM	67-66-3	4.60E-01	N	1.38E-02	---	9.77E+01	**1E-04**	**---**	1.19E-03	2.30E-05		**3E-08**
ETHYL ACETATE	141-78-6	1.00E+00	Y	3.01E-02	---	7.00E+01	**4E-04**	**---**	2.58E-03	-		**---**
ETHYLBENZENE	100-41-4	4.40E-01	N	1.32E-02	---	1.00E+03	**1E-05**	**---**	1.13E-03	2.50E-06		**3E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.70E-01	Y	8.12E-03	---	1.00E+02	**8E-05**	**---**	6.96E-04	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	4.50E-01	N	1.35E-02	---	4.00E+01	**3E-04**	**---**	1.16E-03	2.60E-07		**3E-10**
TRICHLOROETHENE	79-01-6	4.50E-01	N	1.35E-02	---	2.00E+00	**7E-03**	**---**	1.16E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Daycare children	**building 7**	**Total Inhalation**	**2E-02**	**0E+00**	**1E-07**
		Based on NDs only	**2E-02**	**0E+00**	**1E-07**
		Based on Detects only	**8E-04**	**All ND**	**1E-08**
		Site-related only	**8E-03**	**0E+00**	**2E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Daycare children**
Exposure Area:	**building 7**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.58E-03	#N/A

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	4.50E-01	3.86E-03	2.32E-03	---	---	1.0E-06	kidney	4E-09	2E-09	---	---	**6E-09**
TRICHLOROETHENE	79-01-6	4.50E-01	1.16E-03		---		3.1E-06	NHL+liver	4E-09		---		**4E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0001H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0001H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0001H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0002H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0002H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0002H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0003H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.05E-01	N	1.04E-02	3.84E-02	2.00E+00	**5E-03**	**2E-02**	1.18E-02	3.00E-05		**4E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.35E-01	N	1.70E-02	6.27E-02	3.00E+01	**6E-04**	**2E-03**	1.94E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	8.70E-02	Y	4.40E-03	1.63E-02	7.00E+00	**6E-04**	**2E-03**	5.03E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	1.80E+00	Y	9.11E-02	3.37E-01	3.00E+01	**3E-03**	**1E-02**	1.04E-01	7.80E-06		**8E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	1.92E-02	7.11E-02	1.00E+02	**2E-04**	**7E-04**	2.20E-02	6.00E-06		**1E-07**
CHLOROFORM	67-66-3	1.60E-01	Y	8.10E-03	2.99E-02	9.77E+01	**8E-05**	**3E-04**	9.25E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	4.30E-01	Y	2.18E-02	8.05E-02	1.00E+03	**2E-05**	**8E-05**	2.49E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.70E+00	Y	8.60E-02	3.18E-01	1.00E+02	**9E-04**	**3E-03**	9.83E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.10E-01	Y	5.57E-03	2.06E-02	4.00E+01	**1E-04**	**5E-04**	6.36E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	2.90E-02	Y	1.47E-03	5.43E-03	2.00E+00	**7E-04**	**3E-03**	M	4.10E-06	M	**9E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0003H**	**Total Inhalation**	**1E-02**	**4E-02**	**2E-06**
		Based on NDs only	**6E-03**	**2E-02**	**5E-07**
		Based on Detects only	**6E-03**	**2E-02**	**1E-06**
		Site-related only	**1E-03**	**5E-03**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0003H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.90E-02	4.19E-04	2.52E-04	2.33E-03	7.75E-04	1.0E-06	kidney	4E-10	3E-10	2E-09	8E-10	**4E-09**
TRICHLOROETHENE	79-01-6	2.90E-02	1.26E-04		1.55E-03		3.1E-06	NHL+liver	4E-10		5E-09		**5E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0004H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0004H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0004H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0011H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.40E-01	Y	7.09E-03	2.62E-02	2.00E+00	**4E-03**	**1E-02**	8.09E-03	3.00E-05		**2E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	1.80E-01	Y	9.11E-03	3.37E-02	3.00E+01	**3E-04**	**1E-03**	1.04E-02	5.00E-06		**5E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	7.09E-03	2.62E-02	7.00E+00	**1E-03**	**4E-03**	8.09E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	1.10E+00	Y	5.57E-02	2.06E-01	3.00E+01	**2E-03**	**7E-03**	6.36E-02	7.80E-06		**5E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	2.13E-02	7.86E-02	1.00E+02	**2E-04**	**8E-04**	2.43E-02	6.00E-06		**1E-07**
CHLOROFORM	67-66-3	1.00E+00	Y	5.06E-02	1.87E-01	9.77E+01	**5E-04**	**2E-03**	5.78E-02	2.30E-05		**1E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	9.80E-01	Y	4.96E-02	1.83E-01	1.00E+03	**5E-05**	**2E-04**	5.66E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.80E+00	Y	9.11E-02	3.37E-01	1.00E+02	**9E-04**	**3E-03**	1.04E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	5.80E-01	Y	2.94E-02	1.09E-01	4.00E+01	**7E-04**	**3E-03**	3.35E-02	2.60E-07		**9E-09**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	1.47E-02	5.43E-02	2.00E+00	**7E-03**	**3E-02**	M	4.10E-06	M	**9E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0011H**	**Total Inhalation**	**2E-02**	**6E-02**	**3E-06**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**2E-02**	**6E-02**	**3E-06**
		Site-related only	**8E-03**	**3E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0011H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.90E-01	4.19E-03	2.52E-03	2.33E-02	7.75E-03	1.0E-06	kidney	4E-09	3E-09	2E-08	8E-09	**4E-08**
TRICHLOROETHENE	79-01-6	2.90E-01	1.26E-03		1.55E-02		3.1E-06	NHL+liver	4E-09		5E-08		**5E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0012H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0012H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0012H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0013H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0013H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0013H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0025H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0025H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0025H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0026H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	5.53E-01	N	2.80E-02	1.03E-01	2.00E+00	**1E-02**	**5E-02**	3.19E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	1.40E-01	Y	7.09E-03	2.62E-02	3.00E+01	**2E-04**	**9E-04**	8.09E-03	5.00E-06		**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	6.00E-02	Y	3.04E-03	1.12E-02	7.00E+00	**4E-04**	**2E-03**	3.47E-03	2.60E-05		**9E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.30E-01	Y	2.68E-02	9.92E-02	3.00E+01	**9E-04**	**3E-03**	3.06E-02	7.80E-06		**2E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	2.13E-02	7.86E-02	1.00E+02	**2E-04**	**8E-04**	2.43E-02	6.00E-06		**1E-07**
CHLOROFORM	67-66-3	1.10E-01	Y	5.57E-03	2.06E-02	9.77E+01	**6E-05**	**2E-04**	6.36E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	1.80E+00	N	9.11E-02	3.37E-01	7.00E+01	**1E-03**	**5E-03**	1.04E-01	-		**---**
ETHYLBENZENE	100-41-4	7.80E-02	Y	3.95E-03	1.46E-02	1.00E+03	**4E-06**	**1E-05**	4.51E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	7.00E-01	Y	3.54E-02	1.31E-01	1.00E+02	**4E-04**	**1E-03**	4.05E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.00E-01	Y	5.06E-03	1.87E-02	4.00E+01	**1E-04**	**5E-04**	5.78E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	1.35E+00	N	6.83E-02	2.53E-01	2.00E+00	**3E-02**	**1E-01**	M	4.10E-06	M	**4E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0026H**	**Total Inhalation**	**5E-02**	**2E-01**	**2E-06**
		Based on NDs only	**5E-02**	**2E-01**	**1E-06**
		Based on Detects only	**2E-03**	**9E-03**	**7E-07**
		Site-related only	**3E-02**	**1E-01**	**5E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0026H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.35E+00	1.95E-02	1.17E-02	1.08E-01	3.61E-02	1.0E-06	kidney	2E-08	1E-08	1E-07	4E-08	**2E-07**
TRICHLOROETHENE	79-01-6	1.35E+00	5.86E-03		7.22E-02		3.1E-06	NHL+liver	2E-08		2E-07		**2E-07**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0027H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0027H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0027H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0029H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0029H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0029H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0030H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	5.53E-01	N	2.80E-02	1.03E-01	2.00E+00	**1E-02**	**5E-02**	3.19E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	**---**	**---**	---	5.00E-06		**---**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.01E+00	N	5.12E-02	1.89E-01	7.00E+00	**7E-03**	**3E-02**	5.84E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	6.71E-01	Y	3.39E-02	1.25E-01	3.00E+01	**1E-03**	**4E-03**	3.88E-02	7.80E-06		**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	1.57E+00	N	7.95E-02	2.94E-01	1.00E+02	**8E-04**	**3E-03**	9.09E-02	6.00E-06		**5E-07**
CHLOROFORM	67-66-3	1.22E+00	N	6.17E-02	2.28E-01	9.77E+01	**6E-04**	**2E-03**	7.05E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	1.80E+00	N	9.11E-02	3.37E-01	7.00E+01	**1E-03**	**5E-03**	1.04E-01	-		**---**
ETHYLBENZENE	100-41-4	1.10E+00	N	5.57E-02	2.06E-01	1.00E+03	**6E-05**	**2E-04**	6.36E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.00E+00	Y	5.06E-02	1.87E-01	1.00E+02	**5E-04**	**2E-03**	5.78E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.70E+00	N	8.60E-02	3.18E-01	4.00E+01	**2E-03**	**8E-03**	9.83E-02	2.60E-07		**3E-08**
TRICHLOROETHENE	79-01-6	1.35E+00	N	6.83E-02	2.53E-01	2.00E+00	**3E-02**	**1E-01**	M	4.10E-06	M	**4E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0030H**	**Total Inhalation**	**6E-02**	**2E-01**	**6E-06**
		Based on NDs only	**6E-02**	**2E-01**	**5E-06**
		Based on Detects only	**2E-03**	**6E-03**	**3E-07**
		Site-related only	**4E-02**	**1E-01**	**4E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0030H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.35E+00	1.95E-02	1.17E-02	1.08E-01	3.61E-02	1.0E-06	kidney	2E-08	1E-08	1E-07	4E-08	**2E-07**
TRICHLOROETHENE	79-01-6	1.35E+00	5.86E-03		7.22E-02		3.1E-06	NHL+liver	2E-08		2E-07		**2E-07**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0037H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.40E-01	Y	7.09E-03	2.62E-02	2.00E+00	**4E-03**	**1E-02**	8.09E-03	3.00E-05		**2E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.70E-01	N	1.87E-02	6.92E-02	3.00E+01	**6E-04**	**2E-03**	2.14E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	5.57E-03	2.06E-02	7.00E+00	**8E-04**	**3E-03**	6.36E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	9.60E-01	Y	4.86E-02	1.80E-01	3.00E+01	**2E-03**	**6E-03**	5.55E-02	7.80E-06		**4E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	2.13E-02	7.86E-02	1.00E+02	**2E-04**	**8E-04**	2.43E-02	6.00E-06		**1E-07**
CHLOROFORM	67-66-3	2.70E-01	Y	1.37E-02	5.05E-02	9.77E+01	**1E-04**	**5E-04**	1.56E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	9.30E-01	Y	4.71E-02	1.74E-01	1.00E+03	**5E-05**	**2E-04**	5.38E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.80E+00	Y	9.11E-02	3.37E-01	1.00E+02	**9E-04**	**3E-03**	1.04E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	5.30E-01	Y	2.68E-02	9.92E-02	4.00E+01	**7E-04**	**2E-03**	3.06E-02	2.60E-07		**8E-09**
TRICHLOROETHENE	79-01-6	1.50E-01	Y	7.59E-03	2.81E-02	2.00E+00	**4E-03**	**1E-02**	M	4.10E-06	M	**5E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0037H**	**Total Inhalation**	**1E-02**	**5E-02**	**2E-06**
		Based on NDs only	**6E-04**	**2E-03**	**1E-07**
		Based on Detects only	**1E-02**	**4E-02**	**2E-06**
		Site-related only	**5E-03**	**2E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0037H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.50E-01	2.17E-03	1.30E-03	1.20E-02	4.01E-03	1.0E-06	kidney	2E-09	1E-09	1E-08	4E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.50E-01	6.51E-04		8.02E-03		3.1E-06	NHL+liver	2E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0040H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0040H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0040H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0041H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0041H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0041H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0047H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0047H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0047H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0050H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0050H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0050H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0051H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.00E-01	N	1.01E-02	3.74E-02	2.00E+00	**5E-03**	**2E-02**	1.16E-02	3.00E-05		**3E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	4.20E-01	Y	2.13E-02	7.86E-02	3.00E+01	**7E-04**	**3E-03**	2.43E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	6.30E-02	Y	3.19E-03	1.18E-02	7.00E+00	**5E-04**	**2E-03**	3.64E-03	2.60E-05		**9E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.30E-01	Y	2.68E-02	9.92E-02	3.00E+01	**9E-04**	**3E-03**	3.06E-02	7.80E-06		**2E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	2.33E-02	8.61E-02	1.00E+02	**2E-04**	**9E-04**	2.66E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.60E-01	Y	8.10E-03	2.99E-02	9.77E+01	**8E-05**	**3E-04**	9.25E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.30E-01	Y	6.58E-03	2.43E-02	1.00E+03	**7E-06**	**2E-05**	7.51E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	5.50E-01	Y	2.78E-02	1.03E-01	1.00E+02	**3E-04**	**1E-03**	3.18E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	2.00E-01	Y	1.01E-02	3.74E-02	4.00E+01	**3E-04**	**9E-04**	1.16E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0051H**	**Total Inhalation**	**1E-02**	**5E-02**	**1E-06**
		Based on NDs only	**1E-02**	**4E-02**	**4E-07**
		Based on Detects only	**3E-03**	**1E-02**	**8E-07**
		Site-related only	**7E-03**	**3E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0051H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0052H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0052H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0052H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0053H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0053H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0053H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0054H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0054H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0054H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0055H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0055H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0055H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0056H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0056H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0056H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0058H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0058H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0058H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0059H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.20E-01	N	1.11E-02	4.12E-02	2.00E+00	**6E-03**	**2E-02**	1.27E-02	3.00E-05		**4E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.60E-01	N	1.82E-02	6.74E-02	3.00E+01	**6E-04**	**2E-03**	2.08E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	9.20E-02	Y	4.66E-03	1.72E-02	7.00E+00	**7E-04**	**2E-03**	5.32E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	8.30E-01	Y	4.20E-02	1.55E-01	3.00E+01	**1E-03**	**5E-03**	4.80E-02	7.80E-06		**4E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	2.13E-02	7.86E-02	1.00E+02	**2E-04**	**8E-04**	2.43E-02	6.00E-06		**1E-07**
CHLOROFORM	67-66-3	1.00E-01	N	5.06E-03	1.87E-02	9.77E+01	**5E-05**	**2E-04**	5.78E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	5.40E-01	Y	2.73E-02	1.01E-01	1.00E+03	**3E-05**	**1E-04**	3.12E-02	2.50E-06		**8E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.10E+00	Y	5.57E-02	2.06E-01	1.00E+02	**6E-04**	**2E-03**	6.36E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	3.50E-01	Y	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0059H**	**Total Inhalation**	**2E-02**	**6E-02**	**1E-06**
		Based on NDs only	**1E-02**	**5E-02**	**7E-07**
		Based on Detects only	**3E-03**	**1E-02**	**7E-07**
		Site-related only	**7E-03**	**3E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0059H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0060H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0060H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0060H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0061H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0061H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0061H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0062H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0062H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0062H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0063H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	M	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	1.77E-02	6.55E-02	4.00E+01	**4E-04**	**2E-03**	2.02E-02	2.60E-07		**5E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	1.27E-02	4.68E-02	2.00E+00	**6E-03**	**2E-02**	M	4.10E-06	M	**8E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	M	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0063H**	**Total Inhalation**	**7E-03**	**3E-02**	**8E-08**
		Based on NDs only	**7E-03**	**3E-02**	**8E-08**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**7E-03**	**3E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0063H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	3.61E-03	2.17E-03	2.00E-02	6.68E-03	1.0E-06	kidney	4E-09	2E-09	2E-08	7E-09	**3E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	1.08E-03		1.34E-02		3.1E-06	NHL+liver	3E-09		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0064H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.70E-01	N	8.60E-03	3.18E-02	2.00E+00	**4E-03**	**2E-02**	9.83E-03	3.00E-05		**3E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	2.80E-01	N	1.42E-02	5.24E-02	3.00E+01	**5E-04**	**2E-03**	1.62E-02	5.00E-06		**8E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	9.90E-02	Y	5.01E-03	1.85E-02	7.00E+00	**7E-04**	**3E-03**	5.72E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	4.60E-01	Y	2.33E-02	8.61E-02	3.00E+01	**8E-04**	**3E-03**	2.66E-02	7.80E-06		**2E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	2.02E-02	7.48E-02	1.00E+02	**2E-04**	**7E-04**	2.31E-02	6.00E-06		**1E-07**
CHLOROFORM	67-66-3	8.90E-02	Y	4.50E-03	1.67E-02	9.77E+01	**5E-05**	**2E-04**	5.14E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	7.40E-01	Y	3.75E-02	1.38E-01	1.00E+03	**4E-05**	**1E-04**	4.28E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	3.10E+00	Y	1.57E-01	5.80E-01	1.00E+02	**2E-03**	**6E-03**	1.79E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	5.10E-01	Y	2.58E-02	9.54E-02	4.00E+01	**6E-04**	**2E-03**	2.95E-02	2.60E-07		**8E-09**
TRICHLOROETHENE	79-01-6	3.40E-02	Y	1.72E-03	6.36E-03	2.00E+00	**9E-04**	**3E-03**	M	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0064H**	**Total Inhalation**	**1E-02**	**4E-02**	**1E-06**
		Based on NDs only	**5E-03**	**2E-02**	**4E-07**
		Based on Detects only	**5E-03**	**2E-02**	**7E-07**
		Site-related only	**2E-03**	**7E-03**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0064H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	3.40E-02	4.92E-04	2.95E-04	2.73E-03	9.09E-04	1.0E-06	kidney	5E-10	3E-10	3E-09	9E-10	**4E-09**
TRICHLOROETHENE	79-01-6	3.40E-02	1.47E-04		1.82E-03		3.1E-06	NHL+liver	5E-10		6E-09		**6E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0065H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.15E-01	N	1.09E-02	4.02E-02	2.00E+00	**5E-03**	**2E-02**	1.24E-02	3.00E-05		**4E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.55E-01	N	1.80E-02	6.64E-02	3.00E+01	**6E-04**	**2E-03**	2.05E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	7.00E-02	Y	3.54E-03	1.31E-02	7.00E+00	**5E-04**	**2E-03**	4.05E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	7.60E-01	Y	3.85E-02	1.42E-01	3.00E+01	**1E-03**	**5E-03**	4.39E-02	7.80E-06		**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	2.07E-02	7.67E-02	1.00E+02	**2E-04**	**8E-04**	2.37E-02	6.00E-06		**1E-07**
CHLOROFORM	67-66-3	9.50E-02	N	4.81E-03	1.78E-02	9.77E+01	**5E-05**	**2E-04**	5.49E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.70E-01	Y	1.37E-02	5.05E-02	1.00E+03	**1E-05**	**5E-05**	1.56E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.00E+00	Y	5.06E-02	1.87E-01	1.00E+02	**5E-04**	**2E-03**	5.78E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	8.30E-02	Y	4.20E-03	1.55E-02	4.00E+01	**1E-04**	**4E-04**	4.80E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	1.05E-01	N	5.31E-03	1.96E-02	2.00E+00	**3E-03**	**1E-02**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0065H**	**Total Inhalation**	**1E-02**	**4E-02**	**1E-06**
		Based on NDs only	**9E-03**	**3E-02**	**6E-07**
		Based on Detects only	**3E-03**	**1E-02**	**6E-07**
		Site-related only	**3E-03**	**1E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0065H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.05E-01	1.52E-03	9.11E-04	8.42E-03	2.81E-03	1.0E-06	kidney	2E-09	9E-10	8E-09	3E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.05E-01	4.55E-04		5.61E-03		3.1E-06	NHL+liver	1E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0066H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.95E-01	N	9.87E-03	3.65E-02	2.00E+00	**5E-03**	**2E-02**	1.13E-02	3.00E-05		**3E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.15E-01	N	1.59E-02	5.89E-02	3.00E+01	**5E-04**	**2E-03**	1.82E-02	5.00E-06		**9E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.30E-01	Y	6.58E-03	2.43E-02	7.00E+00	**9E-04**	**3E-03**	7.51E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	6.80E-01	Y	3.44E-02	1.27E-01	3.00E+01	**1E-03**	**4E-03**	3.93E-02	7.80E-06		**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	2.18E-02	8.05E-02	1.00E+02	**2E-04**	**8E-04**	2.49E-02	6.00E-06		**1E-07**
CHLOROFORM	67-66-3	1.10E-01	Y	5.57E-03	2.06E-02	9.77E+01	**6E-05**	**2E-04**	6.36E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	3.40E+00	Y	1.72E-01	6.36E-01	1.00E+03	**2E-04**	**6E-04**	1.97E-01	2.50E-06		**5E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	8.00E+00	Y	4.05E-01	1.50E+00	1.00E+02	**4E-03**	**1E-02**	4.62E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	9.90E-02	Y	5.01E-03	1.85E-02	4.00E+01	**1E-04**	**5E-04**	5.72E-03	2.60E-07		**1E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	N	4.81E-03	1.78E-02	2.00E+00	**2E-03**	**9E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0066H**	**Total Inhalation**	**1E-02**	**5E-02**	**2E-06**
		Based on NDs only	**8E-03**	**3E-02**	**5E-07**
		Based on Detects only	**7E-03**	**2E-02**	**1E-06**
		Site-related only	**3E-03**	**1E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0066H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	1.37E-03	8.24E-04	7.62E-03	2.54E-03	1.0E-06	kidney	1E-09	8E-10	8E-09	3E-09	**1E-08**
TRICHLOROETHENE	79-01-6	9.50E-02	4.12E-04		5.08E-03		3.1E-06	NHL+liver	1E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0071H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.30E-01	N	1.16E-02	4.30E-02	2.00E+00	**6E-03**	**2E-02**	1.33E-02	3.00E-05		**4E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.70E-01	N	1.87E-02	6.92E-02	3.00E+01	**6E-04**	**2E-03**	2.14E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	5.60E-02	Y	2.83E-03	1.05E-02	7.00E+00	**4E-04**	**1E-03**	3.24E-03	2.60E-05		**8E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.00E-01	Y	2.53E-02	9.36E-02	3.00E+01	**8E-04**	**3E-03**	2.89E-02	7.80E-06		**2E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	2.18E-02	8.05E-02	1.00E+02	**2E-04**	**8E-04**	2.49E-02	6.00E-06		**1E-07**
CHLOROFORM	67-66-3	1.10E-01	Y	5.57E-03	2.06E-02	9.77E+01	**6E-05**	**2E-04**	6.36E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.10E-01	Y	5.57E-03	2.06E-02	1.00E+03	**6E-06**	**2E-05**	6.36E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	3.90E-01	Y	1.97E-02	7.30E-02	1.00E+02	**2E-04**	**7E-04**	2.25E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.70E-01	Y	8.60E-03	3.18E-02	4.00E+01	**2E-04**	**8E-04**	9.83E-03	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	1.10E-01	N	5.57E-03	2.06E-02	2.00E+00	**3E-03**	**1E-02**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0071H**	**Total Inhalation**	**1E-02**	**4E-02**	**1E-06**
		Based on NDs only	**9E-03**	**3E-02**	**5E-07**
		Based on Detects only	**2E-03**	**7E-03**	**6E-07**
		Site-related only	**4E-03**	**1E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0071H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.10E-01	1.59E-03	9.54E-04	8.82E-03	2.94E-03	1.0E-06	kidney	2E-09	1E-09	9E-09	3E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.10E-01	4.77E-04		5.88E-03		3.1E-06	NHL+liver	1E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0076H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.00E-01	N	1.01E-02	3.74E-02	2.00E+00	**5E-03**	**2E-02**	1.16E-02	3.00E-05		**3E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.30E-01	N	1.67E-02	6.17E-02	3.00E+01	**6E-04**	**2E-03**	1.91E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	6.70E-02	Y	3.39E-03	1.25E-02	7.00E+00	**5E-04**	**2E-03**	3.87E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.30E-01	Y	2.68E-02	9.92E-02	3.00E+01	**9E-04**	**3E-03**	3.06E-02	7.80E-06		**2E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	2.38E-02	8.79E-02	1.00E+02	**2E-04**	**9E-04**	2.72E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	8.20E-02	Y	4.15E-03	1.53E-02	9.77E+01	**4E-05**	**2E-04**	4.74E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	8.30E-02	Y	4.20E-03	1.55E-02	1.00E+03	**4E-06**	**2E-05**	4.80E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	3.00E-01	Y	1.52E-02	5.61E-02	1.00E+02	**2E-04**	**6E-04**	1.73E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.25E-01	N	6.33E-03	2.34E-02	4.00E+01	**2E-04**	**6E-04**	7.23E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	N	5.06E-03	1.87E-02	2.00E+00	**3E-03**	**9E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0076H**	**Total Inhalation**	**1E-02**	**4E-02**	**1E-06**
		Based on NDs only	**8E-03**	**3E-02**	**5E-07**
		Based on Detects only	**2E-03**	**7E-03**	**6E-07**
		Site-related only	**3E-03**	**1E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0076H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	1.45E-03	8.68E-04	8.02E-03	2.67E-03	1.0E-06	kidney	1E-09	9E-10	8E-09	3E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.00E-01	4.34E-04		5.35E-03		3.1E-06	NHL+liver	1E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0091H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.05E-01	N	1.04E-02	3.84E-02	2.00E+00	**5E-03**	**2E-02**	1.18E-02	3.00E-05		**4E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	4.40E-01	Y	2.23E-02	8.23E-02	3.00E+01	**7E-04**	**3E-03**	2.54E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	4.00E-02	Y	2.02E-03	7.48E-03	7.00E+00	**3E-04**	**1E-03**	2.31E-03	2.60E-05		**6E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	6.80E-01	Y	3.44E-02	1.27E-01	3.00E+01	**1E-03**	**4E-03**	3.93E-02	7.80E-06		**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	2.33E-02	8.61E-02	1.00E+02	**2E-04**	**9E-04**	2.66E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.30E-01	Y	1.67E-02	6.17E-02	9.77E+01	**2E-04**	**6E-04**	1.91E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.10E-01	Y	1.06E-02	3.93E-02	1.00E+03	**1E-05**	**4E-05**	1.21E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	8.00E-01	Y	4.05E-02	1.50E-01	1.00E+02	**4E-04**	**1E-03**	4.62E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.90E-01	Y	9.62E-03	3.56E-02	4.00E+01	**2E-04**	**9E-04**	1.10E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	N	5.06E-03	1.87E-02	2.00E+00	**3E-03**	**9E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0091H**	**Total Inhalation**	**1E-02**	**4E-02**	**2E-06**
		Based on NDs only	**8E-03**	**3E-02**	**4E-07**
		Based on Detects only	**3E-03**	**1E-02**	**1E-06**
		Site-related only	**4E-03**	**1E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0091H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.00E-01	1.45E-03	8.68E-04	8.02E-03	2.67E-03	1.0E-06	kidney	1E-09	9E-10	8E-09	3E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.00E-01	4.34E-04		5.35E-03		3.1E-06	NHL+liver	1E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0098H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.10E-01	N	1.06E-02	3.93E-02	2.00E+00	**5E-03**	**2E-02**	1.21E-02	3.00E-05		**4E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.45E-01	N	1.75E-02	6.46E-02	3.00E+01	**6E-04**	**2E-03**	1.99E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	7.09E-03	2.62E-02	7.00E+00	**1E-03**	**4E-03**	8.09E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	7.60E-01	Y	3.85E-02	1.42E-01	3.00E+01	**1E-03**	**5E-03**	4.39E-02	7.80E-06		**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	2.28E-02	8.42E-02	1.00E+02	**2E-04**	**8E-04**	2.60E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.30E-01	Y	6.58E-03	2.43E-02	9.77E+01	**7E-05**	**2E-04**	7.51E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	3.40E+00	Y	1.72E-01	6.36E-01	1.00E+03	**2E-04**	**6E-04**	1.97E-01	2.50E-06		**5E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	7.90E+00	Y	4.00E-01	1.48E+00	1.00E+02	**4E-03**	**1E-02**	4.57E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.30E-01	Y	6.58E-03	2.43E-02	4.00E+01	**2E-04**	**6E-04**	7.51E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	N	5.06E-03	1.87E-02	2.00E+00	**3E-03**	**9E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0098H**	**Total Inhalation**	**2E-02**	**6E-02**	**2E-06**
		Based on NDs only	**8E-03**	**3E-02**	**5E-07**
		Based on Detects only	**7E-03**	**3E-02**	**1E-06**
		Site-related only	**3E-03**	**1E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0098H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	1.45E-03	8.68E-04	8.02E-03	2.67E-03	1.0E-06	kidney	1E-09	9E-10	8E-09	3E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.00E-01	4.34E-04		5.35E-03		3.1E-06	NHL+liver	1E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0102H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.85E-01	N	9.36E-03	3.46E-02	2.00E+00	**5E-03**	**2E-02**	1.07E-02	3.00E-05		**3E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.00E-01	N	1.52E-02	5.61E-02	3.00E+01	**5E-04**	**2E-03**	1.73E-02	5.00E-06		**9E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	7.00E-02	N	3.54E-03	1.31E-02	7.00E+00	**5E-04**	**2E-03**	4.05E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	3.60E-01	Y	1.82E-02	6.74E-02	3.00E+01	**6E-04**	**2E-03**	2.08E-02	7.80E-06		**2E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	2.28E-02	8.42E-02	1.00E+02	**2E-04**	**8E-04**	2.60E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.30E-01	Y	1.67E-02	6.17E-02	9.77E+01	**2E-04**	**6E-04**	1.91E-02	2.30E-05		**4E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	7.00E-02	N	3.54E-03	1.31E-02	1.00E+03	**4E-06**	**1E-05**	4.05E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	3.50E-01	Y	1.77E-02	6.55E-02	1.00E+02	**2E-04**	**7E-04**	2.02E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.15E-01	N	5.82E-03	2.15E-02	4.00E+01	**1E-04**	**5E-04**	6.65E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	N	4.55E-03	1.68E-02	2.00E+00	**2E-03**	**8E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0102H**	**Total Inhalation**	**9E-03**	**3E-02**	**1E-06**
		Based on NDs only	**8E-03**	**3E-02**	**6E-07**
		Based on Detects only	**1E-03**	**4E-03**	**8E-07**
		Site-related only	**3E-03**	**1E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0102H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.00E-02	1.30E-03	7.81E-04	7.22E-03	2.41E-03	1.0E-06	kidney	1E-09	8E-10	7E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	9.00E-02	3.90E-04		4.81E-03		3.1E-06	NHL+liver	1E-09		1E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0118H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.10E-01	N	1.06E-02	3.93E-02	2.00E+00	**5E-03**	**2E-02**	1.21E-02	3.00E-05		**4E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.45E-01	N	1.75E-02	6.46E-02	3.00E+01	**6E-04**	**2E-03**	1.99E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	7.50E-02	N	3.80E-03	1.40E-02	7.00E+00	**5E-04**	**2E-03**	4.34E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.30E-01	Y	2.68E-02	9.92E-02	3.00E+01	**9E-04**	**3E-03**	3.06E-02	7.80E-06		**2E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	2.23E-02	8.23E-02	1.00E+02	**2E-04**	**8E-04**	2.54E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	9.40E-02	Y	4.76E-03	1.76E-02	9.77E+01	**5E-05**	**2E-04**	5.43E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.20E-01	Y	6.07E-03	2.25E-02	1.00E+03	**6E-06**	**2E-05**	6.94E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	4.50E-01	Y	2.28E-02	8.42E-02	1.00E+02	**2E-04**	**8E-04**	2.60E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.40E-01	Y	7.09E-03	2.62E-02	4.00E+01	**2E-04**	**7E-04**	8.09E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	N	5.06E-03	1.87E-02	2.00E+00	**3E-03**	**9E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0118H**	**Total Inhalation**	**1E-02**	**4E-02**	**1E-06**
		Based on NDs only	**9E-03**	**3E-02**	**6E-07**
		Based on Detects only	**2E-03**	**6E-03**	**5E-07**
		Site-related only	**3E-03**	**1E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0118H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	1.45E-03	8.68E-04	8.02E-03	2.67E-03	1.0E-06	kidney	1E-09	9E-10	8E-09	3E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.00E-01	4.34E-04		5.35E-03		3.1E-06	NHL+liver	1E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0121H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.90E-01	N	9.62E-03	3.56E-02	2.00E+00	**5E-03**	**2E-02**	1.10E-02	3.00E-05		**3E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.15E-01	N	1.59E-02	5.89E-02	3.00E+01	**5E-04**	**2E-03**	1.82E-02	5.00E-06		**9E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.50E-01	Y	7.59E-03	2.81E-02	7.00E+00	**1E-03**	**4E-03**	8.67E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	8.50E-01	Y	4.30E-02	1.59E-01	3.00E+01	**1E-03**	**5E-03**	4.91E-02	7.80E-06		**4E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.60E-01	Y	1.82E-02	6.74E-02	1.00E+02	**2E-04**	**7E-04**	2.08E-02	6.00E-06		**1E-07**
CHLOROFORM	67-66-3	1.20E-01	Y	6.07E-03	2.25E-02	9.77E+01	**6E-05**	**2E-04**	6.94E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.40E+00	Y	1.21E-01	4.49E-01	1.00E+03	**1E-04**	**4E-04**	1.39E-01	2.50E-06		**3E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	5.10E+00	Y	2.58E-01	9.54E-01	1.00E+02	**3E-03**	**1E-02**	2.95E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.40E-01	Y	7.09E-03	2.62E-02	4.00E+01	**2E-04**	**7E-04**	8.09E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	N	4.81E-03	1.78E-02	2.00E+00	**2E-03**	**9E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0121H**	**Total Inhalation**	**1E-02**	**5E-02**	**2E-06**
		Based on NDs only	**8E-03**	**3E-02**	**4E-07**
		Based on Detects only	**6E-03**	**2E-02**	**1E-06**
		Site-related only	**3E-03**	**1E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0121H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	1.37E-03	8.24E-04	7.62E-03	2.54E-03	1.0E-06	kidney	1E-09	8E-10	8E-09	3E-09	**1E-08**
TRICHLOROETHENE	79-01-6	9.50E-02	4.12E-04		5.08E-03		3.1E-06	NHL+liver	1E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0122H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.00E-01	N	1.01E-02	3.74E-02	2.00E+00	**5E-03**	**2E-02**	1.16E-02	3.00E-05		**3E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.30E-01	N	1.67E-02	6.17E-02	3.00E+01	**6E-04**	**2E-03**	1.91E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	6.20E-02	Y	3.14E-03	1.16E-02	7.00E+00	**4E-04**	**2E-03**	3.58E-03	2.60E-05		**9E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	7.00E-01	Y	3.54E-02	1.31E-01	3.00E+01	**1E-03**	**4E-03**	4.05E-02	7.80E-06		**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	2.28E-02	8.42E-02	1.00E+02	**2E-04**	**8E-04**	2.60E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	9.80E-02	Y	4.96E-03	1.83E-02	9.77E+01	**5E-05**	**2E-04**	5.66E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.50E+00	Y	1.27E-01	4.68E-01	1.00E+03	**1E-04**	**5E-04**	1.45E-01	2.50E-06		**4E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	7.20E+00	Y	3.64E-01	1.35E+00	1.00E+02	**4E-03**	**1E-02**	4.16E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.80E-01	Y	9.11E-03	3.37E-02	4.00E+01	**2E-04**	**8E-04**	1.04E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	N	5.06E-03	1.87E-02	2.00E+00	**3E-03**	**9E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0122H**	**Total Inhalation**	**1E-02**	**5E-02**	**2E-06**
		Based on NDs only	**8E-03**	**3E-02**	**5E-07**
		Based on Detects only	**6E-03**	**2E-02**	**1E-06**
		Site-related only	**3E-03**	**1E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0122H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	1.45E-03	8.68E-04	8.02E-03	2.67E-03	1.0E-06	kidney	1E-09	9E-10	8E-09	3E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.00E-01	4.34E-04		5.35E-03		3.1E-06	NHL+liver	1E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0135H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.90E-01	N	9.62E-03	3.56E-02	2.00E+00	**5E-03**	**2E-02**	1.10E-02	3.00E-05		**3E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.10E-01	N	1.57E-02	5.80E-02	3.00E+01	**5E-04**	**2E-03**	1.79E-02	5.00E-06		**9E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	7.00E-02	N	3.54E-03	1.31E-02	7.00E+00	**5E-04**	**2E-03**	4.05E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.80E-01	Y	2.94E-02	1.09E-01	3.00E+01	**1E-03**	**4E-03**	3.35E-02	7.80E-06		**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	2.33E-02	8.61E-02	1.00E+02	**2E-04**	**9E-04**	2.66E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.10E-01	Y	5.57E-03	2.06E-02	9.77E+01	**6E-05**	**2E-04**	6.36E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.60E-01	Y	8.10E-03	2.99E-02	1.00E+03	**8E-06**	**3E-05**	9.25E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	5.20E-01	Y	2.63E-02	9.73E-02	1.00E+02	**3E-04**	**1E-03**	3.01E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.50E-01	Y	7.59E-03	2.81E-02	4.00E+01	**2E-04**	**7E-04**	8.67E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	N	4.55E-03	1.68E-02	2.00E+00	**2E-03**	**8E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0135H**	**Total Inhalation**	**1E-02**	**4E-02**	**1E-06**
		Based on NDs only	**8E-03**	**3E-02**	**6E-07**
		Based on Detects only	**2E-03**	**6E-03**	**6E-07**
		Site-related only	**3E-03**	**1E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0135H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.00E-02	1.30E-03	7.81E-04	7.22E-03	2.41E-03	1.0E-06	kidney	1E-09	8E-10	7E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	9.00E-02	3.90E-04		4.81E-03		3.1E-06	NHL+liver	1E-09		1E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0139H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.30E-01	N	1.16E-02	4.30E-02	2.00E+00	**6E-03**	**2E-02**	1.33E-02	3.00E-05		**4E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.70E-01	N	1.87E-02	6.92E-02	3.00E+01	**6E-04**	**2E-03**	2.14E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	6.10E-02	Y	3.09E-03	1.14E-02	7.00E+00	**4E-04**	**2E-03**	3.53E-03	2.60E-05		**9E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.10E-01	Y	2.58E-02	9.54E-02	3.00E+01	**9E-04**	**3E-03**	2.95E-02	7.80E-06		**2E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	2.02E-02	7.48E-02	1.00E+02	**2E-04**	**7E-04**	2.31E-02	6.00E-06		**1E-07**
CHLOROFORM	67-66-3	7.70E-02	Y	3.90E-03	1.44E-02	9.77E+01	**4E-05**	**1E-04**	4.45E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	8.00E-02	Y	4.05E-03	1.50E-02	1.00E+03	**4E-06**	**1E-05**	4.62E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.90E-01	Y	1.47E-02	5.43E-02	1.00E+02	**1E-04**	**5E-04**	1.68E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.40E-01	N	7.09E-03	2.62E-02	4.00E+01	**2E-04**	**7E-04**	8.09E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	1.10E-01	N	5.57E-03	2.06E-02	2.00E+00	**3E-03**	**1E-02**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0139H**	**Total Inhalation**	**1E-02**	**4E-02**	**1E-06**
		Based on NDs only	**9E-03**	**3E-02**	**5E-07**
		Based on Detects only	**2E-03**	**6E-03**	**6E-07**
		Site-related only	**4E-03**	**1E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0139H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.10E-01	1.59E-03	9.54E-04	8.82E-03	2.94E-03	1.0E-06	kidney	2E-09	1E-09	9E-09	3E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.10E-01	4.77E-04		5.88E-03		3.1E-06	NHL+liver	1E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0146H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.95E-01	N	9.87E-03	3.65E-02	2.00E+00	**5E-03**	**2E-02**	1.13E-02	3.00E-05		**3E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	1.80E-01	Y	9.11E-03	3.37E-02	3.00E+01	**3E-04**	**1E-03**	1.04E-02	5.00E-06		**5E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	5.50E-02	Y	2.78E-03	1.03E-02	7.00E+00	**4E-04**	**1E-03**	3.18E-03	2.60E-05		**8E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	4.20E-01	Y	2.13E-02	7.86E-02	3.00E+01	**7E-04**	**3E-03**	2.43E-02	7.80E-06		**2E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	2.13E-02	7.86E-02	1.00E+02	**2E-04**	**8E-04**	2.43E-02	6.00E-06		**1E-07**
CHLOROFORM	67-66-3	7.60E-02	Y	3.85E-03	1.42E-02	9.77E+01	**4E-05**	**1E-04**	4.39E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	7.10E-02	Y	3.59E-03	1.33E-02	1.00E+03	**4E-06**	**1E-05**	4.10E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.40E-01	Y	1.21E-02	4.49E-02	1.00E+02	**1E-04**	**4E-04**	1.39E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.20E-01	N	6.07E-03	2.25E-02	4.00E+01	**2E-04**	**6E-04**	6.94E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	N	4.81E-03	1.78E-02	2.00E+00	**2E-03**	**9E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0146H**	**Total Inhalation**	**9E-03**	**3E-02**	**1E-06**
		Based on NDs only	**7E-03**	**3E-02**	**4E-07**
		Based on Detects only	**2E-03**	**7E-03**	**6E-07**
		Site-related only	**3E-03**	**1E-02**	**8E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0146H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	1.37E-03	8.24E-04	7.62E-03	2.54E-03	1.0E-06	kidney	1E-09	8E-10	8E-09	3E-09	**1E-08**
TRICHLOROETHENE	79-01-6	9.50E-02	4.12E-04		5.08E-03		3.1E-06	NHL+liver	1E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0148H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.05E-01	N	1.04E-02	3.84E-02	2.00E+00	**5E-03**	**2E-02**	1.18E-02	3.00E-05		**4E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	2.60E-01	Y	1.32E-02	4.87E-02	3.00E+01	**4E-04**	**2E-03**	1.50E-02	5.00E-06		**8E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	7.09E-03	2.62E-02	7.00E+00	**1E-03**	**4E-03**	8.09E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	7.20E-01	Y	3.64E-02	1.35E-01	3.00E+01	**1E-03**	**4E-03**	4.16E-02	7.80E-06		**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	2.18E-02	8.05E-02	1.00E+02	**2E-04**	**8E-04**	2.49E-02	6.00E-06		**1E-07**
CHLOROFORM	67-66-3	1.30E-01	Y	6.58E-03	2.43E-02	9.77E+01	**7E-05**	**2E-04**	7.51E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	3.80E+00	Y	1.92E-01	7.11E-01	1.00E+03	**2E-04**	**7E-04**	2.20E-01	2.50E-06		**5E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	9.00E+00	Y	4.55E-01	1.68E+00	1.00E+02	**5E-03**	**2E-02**	5.20E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.50E-01	Y	7.59E-03	2.81E-02	4.00E+01	**2E-04**	**7E-04**	8.67E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	N	5.06E-03	1.87E-02	2.00E+00	**3E-03**	**9E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0148H**	**Total Inhalation**	**2E-02**	**6E-02**	**2E-06**
		Based on NDs only	**8E-03**	**3E-02**	**4E-07**
		Based on Detects only	**8E-03**	**3E-02**	**1E-06**
		Site-related only	**3E-03**	**1E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0148H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	1.45E-03	8.68E-04	8.02E-03	2.67E-03	1.0E-06	kidney	1E-09	9E-10	8E-09	3E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.00E-01	4.34E-04		5.35E-03		3.1E-06	NHL+liver	1E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0153H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.05E-01	N	1.04E-02	3.84E-02	2.00E+00	**5E-03**	**2E-02**	1.18E-02	3.00E-05		**4E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	1.10E-01	Y	5.57E-03	2.06E-02	3.00E+01	**2E-04**	**7E-04**	6.36E-03	5.00E-06		**3E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	9.60E-02	Y	4.86E-03	1.80E-02	7.00E+00	**7E-04**	**3E-03**	5.55E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	7.40E-01	Y	3.75E-02	1.38E-01	3.00E+01	**1E-03**	**5E-03**	4.28E-02	7.80E-06		**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	2.23E-02	8.23E-02	1.00E+02	**2E-04**	**8E-04**	2.54E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.20E-01	Y	6.07E-03	2.25E-02	9.77E+01	**6E-05**	**2E-04**	6.94E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	4.70E+00	Y	2.38E-01	8.79E-01	1.00E+03	**2E-04**	**9E-04**	2.72E-01	2.50E-06		**7E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.20E+01	Y	6.07E-01	2.25E+00	1.00E+02	**6E-03**	**2E-02**	6.94E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	2.00E-01	Y	1.01E-02	3.74E-02	4.00E+01	**3E-04**	**9E-04**	1.16E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	N	5.06E-03	1.87E-02	2.00E+00	**3E-03**	**9E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0153H**	**Total Inhalation**	**2E-02**	**6E-02**	**2E-06**
		Based on NDs only	**8E-03**	**3E-02**	**4E-07**
		Based on Detects only	**9E-03**	**3E-02**	**2E-06**
		Site-related only	**3E-03**	**1E-02**	**7E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0153H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	1.45E-03	8.68E-04	8.02E-03	2.67E-03	1.0E-06	kidney	1E-09	9E-10	8E-09	3E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.00E-01	4.34E-04		5.35E-03		3.1E-06	NHL+liver	1E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0162H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.90E-01	N	9.62E-03	3.56E-02	2.00E+00	**5E-03**	**2E-02**	1.10E-02	3.00E-05		**3E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.10E-01	N	1.57E-02	5.80E-02	3.00E+01	**5E-04**	**2E-03**	1.79E-02	5.00E-06		**9E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	6.80E-02	Y	3.44E-03	1.27E-02	7.00E+00	**5E-04**	**2E-03**	3.93E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.10E-01	Y	2.58E-02	9.54E-02	3.00E+01	**9E-04**	**3E-03**	2.95E-02	7.80E-06		**2E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	2.18E-02	8.05E-02	1.00E+02	**2E-04**	**8E-04**	2.49E-02	6.00E-06		**1E-07**
CHLOROFORM	67-66-3	9.80E-02	Y	4.96E-03	1.83E-02	9.77E+01	**5E-05**	**2E-04**	5.66E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	1.20E-01	Y	6.07E-03	2.25E-02	1.00E+03	**6E-06**	**2E-05**	6.94E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	4.00E-01	Y	2.02E-02	7.48E-02	1.00E+02	**2E-04**	**7E-04**	2.31E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	2.70E-01	Y	1.37E-02	5.05E-02	4.00E+01	**3E-04**	**1E-03**	1.56E-02	2.60E-07		**4E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	N	4.55E-03	1.68E-02	2.00E+00	**2E-03**	**8E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0162H**	**Total Inhalation**	**1E-02**	**4E-02**	**1E-06**
		Based on NDs only	**8E-03**	**3E-02**	**4E-07**
		Based on Detects only	**2E-03**	**8E-03**	**6E-07**
		Site-related only	**3E-03**	**1E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0162H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.00E-02	1.30E-03	7.81E-04	7.22E-03	2.41E-03	1.0E-06	kidney	1E-09	8E-10	7E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	9.00E-02	3.90E-04		4.81E-03		3.1E-06	NHL+liver	1E-09		1E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0173H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.00E-01	N	1.01E-02	3.74E-02	2.00E+00	**5E-03**	**2E-02**	1.16E-02	3.00E-05		**3E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.30E-01	N	1.67E-02	6.17E-02	3.00E+01	**6E-04**	**2E-03**	1.91E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	5.40E-02	Y	2.73E-03	1.01E-02	7.00E+00	**4E-04**	**1E-03**	3.12E-03	2.60E-05		**8E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.10E-01	Y	2.58E-02	9.54E-02	3.00E+01	**9E-04**	**3E-03**	2.95E-02	7.80E-06		**2E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	2.23E-02	8.23E-02	1.00E+02	**2E-04**	**8E-04**	2.54E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	7.20E-02	Y	3.64E-03	1.35E-02	9.77E+01	**4E-05**	**1E-04**	4.16E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	7.10E-02	Y	3.59E-03	1.33E-02	1.00E+03	**4E-06**	**1E-05**	4.10E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.50E-01	Y	1.27E-02	4.68E-02	1.00E+02	**1E-04**	**5E-04**	1.45E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.25E-01	N	6.33E-03	2.34E-02	4.00E+01	**2E-04**	**6E-04**	7.23E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	N	5.06E-03	1.87E-02	2.00E+00	**3E-03**	**9E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0173H**	**Total Inhalation**	**1E-02**	**4E-02**	**1E-06**
		Based on NDs only	**8E-03**	**3E-02**	**5E-07**
		Based on Detects only	**2E-03**	**6E-03**	**6E-07**
		Site-related only	**3E-03**	**1E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0173H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	1.45E-03	8.68E-04	8.02E-03	2.67E-03	1.0E-06	kidney	1E-09	9E-10	8E-09	3E-09	**1E-08**
TRICHLOROETHENE	79-01-6	1.00E-01	4.34E-04		5.35E-03		3.1E-06	NHL+liver	1E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0174H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.95E-01	N	9.87E-03	3.65E-02	2.00E+00	**5E-03**	**2E-02**	1.13E-02	3.00E-05		**3E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.15E-01	N	1.59E-02	5.89E-02	3.00E+01	**5E-04**	**2E-03**	1.82E-02	5.00E-06		**9E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	5.50E-02	Y	2.78E-03	1.03E-02	7.00E+00	**4E-04**	**1E-03**	3.18E-03	2.60E-05		**8E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	4.10E-01	Y	2.07E-02	7.67E-02	3.00E+01	**7E-04**	**3E-03**	2.37E-02	7.80E-06		**2E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	2.23E-02	8.23E-02	1.00E+02	**2E-04**	**8E-04**	2.54E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	7.00E-02	Y	3.54E-03	1.31E-02	9.77E+01	**4E-05**	**1E-04**	4.05E-03	2.30E-05		**9E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	6.70E-02	Y	3.39E-03	1.25E-02	1.00E+03	**3E-06**	**1E-05**	3.87E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.30E-01	Y	1.16E-02	4.30E-02	1.00E+02	**1E-04**	**4E-04**	1.33E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.20E-01	N	6.07E-03	2.25E-02	4.00E+01	**2E-04**	**6E-04**	6.94E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	N	4.81E-03	1.78E-02	2.00E+00	**2E-03**	**9E-03**	M	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0174H**	**Total Inhalation**	**9E-03**	**4E-02**	**1E-06**
		Based on NDs only	**8E-03**	**3E-02**	**5E-07**
		Based on Detects only	**1E-03**	**5E-03**	**5E-07**
		Site-related only	**3E-03**	**1E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0174H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	1.37E-03	8.24E-04	7.62E-03	2.54E-03	1.0E-06	kidney	1E-09	8E-10	8E-09	3E-09	**1E-08**
TRICHLOROETHENE	79-01-6	9.50E-02	4.12E-04		5.08E-03		3.1E-06	NHL+liver	1E-09		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0302H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.65E-01	N	8.35E-03	3.09E-02	2.00E+00	**4E-03**	**2E-02**	9.54E-03	3.00E-05		**3E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	2.70E-01	N	1.37E-02	5.05E-02	3.00E+01	**5E-04**	**2E-03**	1.56E-02	5.00E-06		**8E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	9.70E-02	Y	4.91E-03	1.82E-02	7.00E+00	**7E-04**	**3E-03**	5.61E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	5.40E-01	Y	2.73E-02	1.01E-01	3.00E+01	**9E-04**	**3E-03**	3.12E-02	7.80E-06		**2E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.20E-01	Y	1.62E-02	5.99E-02	1.00E+02	**2E-04**	**6E-04**	1.85E-02	6.00E-06		**1E-07**
CHLOROFORM	67-66-3	8.20E-02	Y	4.15E-03	1.53E-02	9.77E+01	**4E-05**	**2E-04**	4.74E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	6.40E-01	Y	3.24E-02	1.20E-01	1.00E+03	**3E-05**	**1E-04**	3.70E-02	2.50E-06		**9E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	2.90E+00	Y	1.47E-01	5.43E-01	1.00E+02	**1E-03**	**5E-03**	1.68E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	3.70E-01	Y	1.87E-02	6.92E-02	4.00E+01	**5E-04**	**2E-03**	2.14E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	8.00E-02	N	4.05E-03	1.50E-02	2.00E+00	**2E-03**	**7E-03**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0302H**	**Total Inhalation**	**1E-02**	**4E-02**	**1E-06**
		Based on NDs only	**7E-03**	**2E-02**	**4E-07**
		Based on Detects only	**4E-03**	**1E-02**	**7E-07**
		Site-related only	**3E-03**	**1E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0302H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	8.00E-02	1.16E-03	6.94E-04	6.42E-03	2.14E-03	1.0E-06	kidney	1E-09	7E-10	6E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	8.00E-02	3.47E-04		4.28E-03		3.1E-06	NHL+liver	1E-09		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0334H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	2.22E+00	N	1.12E-01	4.14E-01	2.00E+00	**6E-02**	**2E-01**	1.28E-01	3.00E-05		**4E-06**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.61E-01	N	1.82E-02	6.75E-02	3.00E+01	**6E-04**	**2E-03**	2.08E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	1.03E-01	Y	5.21E-03	1.93E-02	7.00E+00	**7E-04**	**3E-03**	5.95E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	7.06E-01	Y	3.57E-02	1.32E-01	3.00E+01	**1E-03**	**4E-03**	4.08E-02	7.80E-06		**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	5.52E-01	Y	2.79E-02	1.03E-01	1.00E+02	**3E-04**	**1E-03**	3.19E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	4.87E-02	N	2.46E-03	9.10E-03	9.77E+01	**3E-05**	**9E-05**	2.81E-03	2.30E-05		**6E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	9.84E-01	Y	4.98E-02	1.84E-01	1.00E+03	**5E-05**	**2E-04**	5.69E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	3.67E+00	Y	1.86E-01	6.87E-01	1.00E+02	**2E-03**	**7E-03**	2.12E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	3.74E-01	Y	1.89E-02	7.00E-02	4.00E+01	**5E-04**	**2E-03**	2.16E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	1.42E-01	Y	7.19E-03	2.66E-02	2.00E+00	**4E-03**	**1E-02**	M	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0334H**	**Total Inhalation**	**6E-02**	**2E-01**	**5E-06**
		Based on NDs only	**6E-02**	**2E-01**	**4E-06**
		Based on Detects only	**8E-03**	**3E-02**	**9E-07**
		Site-related only	**5E-03**	**2E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0334H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.42E-01	2.05E-03	1.23E-03	1.14E-02	3.80E-03	1.0E-06	kidney	2E-09	1E-09	1E-08	4E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.42E-01	6.16E-04		7.59E-03		3.1E-06	NHL+liver	2E-09		2E-08		**3E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**0381H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.65E-01	N	8.35E-03	3.09E-02	2.00E+00	**4E-03**	**2E-02**	9.54E-03	3.00E-05		**3E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	1.50E-01	Y	7.59E-03	2.81E-02	3.00E+01	**3E-04**	**9E-04**	8.67E-03	5.00E-06		**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	3.90E-03	1.44E-02	7.00E+00	**6E-04**	**2E-03**	4.45E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	4.30E-01	Y	2.18E-02	8.05E-02	3.00E+01	**7E-04**	**3E-03**	2.49E-02	7.80E-06		**2E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.70E-01	Y	1.87E-02	6.92E-02	1.00E+02	**2E-04**	**7E-04**	2.14E-02	6.00E-06		**1E-07**
CHLOROFORM	67-66-3	9.50E-02	Y	4.81E-03	1.78E-02	9.77E+01	**5E-05**	**2E-04**	5.49E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	2.80E-01	Y	1.42E-02	5.24E-02	1.00E+03	**1E-05**	**5E-05**	1.62E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.20E+00	Y	6.07E-02	2.25E-01	1.00E+02	**6E-04**	**2E-03**	6.94E-02	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	1.90E-01	Y	9.62E-03	3.56E-02	4.00E+01	**2E-04**	**9E-04**	1.10E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	8.00E-02	N	4.05E-03	1.50E-02	2.00E+00	**2E-03**	**7E-03**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**0381H**	**Total Inhalation**	**9E-03**	**3E-02**	**1E-06**
		Based on NDs only	**6E-03**	**2E-02**	**3E-07**
		Based on Detects only	**3E-03**	**1E-02**	**7E-07**
		Site-related only	**3E-03**	**9E-03**	**7E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**0381H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	8.00E-02	1.16E-03	6.94E-04	6.42E-03	2.14E-03	1.0E-06	kidney	1E-09	7E-10	6E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	8.00E-02	3.47E-04		4.28E-03		3.1E-06	NHL+liver	1E-09		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Residential**
Exposure Area:	**B32**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	5.06E-02	1.87E-01	TWFc (unitless)	5.78E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.65E-01	N	8.35E-03	3.09E-02	2.00E+00	**4E-03**	**2E-02**	9.54E-03	3.00E-05		**3E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	2.70E-01	N	1.37E-02	5.05E-02	3.00E+01	**5E-04**	**2E-03**	1.56E-02	5.00E-06		**8E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	7.40E-02	Y	3.75E-03	1.38E-02	7.00E+00	**5E-04**	**2E-03**	4.28E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	4.90E-01	Y	2.48E-02	9.17E-02	3.00E+01	**8E-04**	**3E-03**	2.83E-02	7.80E-06		**2E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	6.90E-01	Y	3.49E-02	1.29E-01	1.00E+02	**3E-04**	**1E-03**	3.99E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	9.00E-02	Y	4.55E-03	1.68E-02	9.77E+01	**5E-05**	**2E-04**	5.20E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	7.80E-01	Y	3.95E-02	1.46E-01	1.00E+03	**4E-05**	**1E-04**	4.51E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	3.60E+00	Y	1.82E-01	6.74E-01	1.00E+02	**2E-03**	**7E-03**	2.08E-01	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	M	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	4.30E-01	Y	2.18E-02	8.05E-02	4.00E+01	**5E-04**	**2E-03**	2.49E-02	2.60E-07		**6E-09**
TRICHLOROETHENE	79-01-6	8.00E-02	N	4.05E-03	1.50E-02	2.00E+00	**2E-03**	**7E-03**	M	4.10E-06	M	**2E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	M	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Residential	**B32**	**Total Inhalation**	**1E-02**	**4E-02**	**1E-06**
		Based on NDs only	**7E-03**	**2E-02**	**4E-07**
		Based on Detects only	**4E-03**	**2E-02**	**8E-07**
		Site-related only	**3E-03**	**1E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Residential**
Exposure Area:	**B32**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	4.34E-03	5.35E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	8.00E-02	1.16E-03	6.94E-04	6.42E-03	2.14E-03	1.0E-06	kidney	1E-09	7E-10	6E-09	2E-09	**1E-08**
TRICHLOROETHENE	79-01-6	8.00E-02	3.47E-04		4.28E-03		3.1E-06	NHL+liver	1E-09		1E-08		**1E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Students**
Exposure Area:	**0045S**

Pathway:
Inhalation of Outdoor Air

	RME primary	RME secondary		RME lifetime
TWFnc (unitless)	2.05E-02	2.05E-02	TWFc (unitless)	3.82E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	7.19E-03	7.19E-03	4.00E+01	**2E-04**	**2E-04**	1.34E-03	2.60E-07		**3E-10**
TRICHLOROETHENE	79-01-6	2.50E-01	N	5.14E-03	5.14E-03	2.00E+00	**3E-03**	**3E-03**	9.54E-04	4.10E-06	M	**7E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Students	**0045S**	**Total Inhalation**	**3E-03**	**3E-03**	**7E-09**
		Based on NDs only	**3E-03**	**3E-03**	**7E-09**
		Based on Detects only	**All ND**	**All ND**	**All ND**
		Site-related only	**3E-03**	**3E-03**	**7E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Students**
Exposure Area:	**0045S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.05E-03	1.76E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	1.71E-03	1.03E-03	6.60E-04	2.20E-04	1.0E-06	kidney	2E-09	1E-09	7E-10	2E-10	**4E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	5.14E-04		4.40E-04		3.1E-06	NHL+liver	2E-09		1E-09		**3E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Students**
Exposure Area:	**365S**

Pathway:
Inhalation of Outdoor Air

	RME primary	RME secondary		RME lifetime
TWFnc (unitless)	2.05E-02	2.05E-02	TWFc (unitless)	3.82E-03

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05		**---**
1,3-BUTADIENE	106-99-0	1.95E-01	N	4.01E-03	4.01E-03	2.00E+00	**2E-03**	**2E-03**	7.44E-04	3.00E-05		**2E-08**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05		**---**
1,4-DIOXANE	123-91-1	3.15E-01	N	6.47E-03	6.47E-03	3.00E+01	**2E-04**	**2E-04**	1.20E-03	5.00E-06		**6E-09**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05		**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-		**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04		**---**
1,2-DICHLOROETHANE	107-06-2	7.20E-02	Y	1.48E-03	1.48E-03	7.00E+00	**2E-04**	**2E-04**	2.75E-04	2.60E-05		**7E-09**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06		**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-		**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05		**---**
BENZENE	71-43-2	4.60E-01	Y	9.45E-03	9.45E-03	3.00E+01	**3E-04**	**3E-04**	1.76E-03	7.80E-06		**1E-08**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05		**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-		**---**
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	7.81E-03	7.81E-03	1.00E+02	**8E-05**	**8E-05**	1.45E-03	6.00E-06		**9E-09**
CHLOROFORM	67-66-3	9.00E-02	Y	1.85E-03	1.85E-03	9.77E+01	**2E-05**	**2E-05**	3.43E-04	2.30E-05		**8E-09**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-		**---**
ETHYLBENZENE	100-41-4	3.90E-01	Y	8.01E-03	8.01E-03	1.00E+03	**8E-06**	**8E-06**	1.49E-03	2.50E-06		**4E-09**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05		**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
M,P-XYLENE	108-38-3	1.90E+00	Y	3.90E-02	3.90E-02	1.00E+02	**4E-04**	**4E-04**	7.25E-03	-		**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M	**---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05		**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-		**---**
TETRACHLOROETHENE	127-18-4	2.10E-01	Y	4.32E-03	4.32E-03	4.00E+01	**1E-04**	**1E-04**	8.01E-04	2.60E-07		**2E-10**
TRICHLOROETHENE	79-01-6	9.50E-02	N	1.95E-03	1.95E-03	2.00E+00	**1E-03**	**1E-03**	3.63E-04	4.10E-06	M	**2E-09**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-		**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M	**---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Students	**365S**	**Total Inhalation**	**4E-03**	**4E-03**	**7E-08**
		Based on NDs only	**3E-03**	**3E-03**	**3E-08**
		Based on Detects only	**1E-03**	**1E-03**	**4E-08**
		Site-related only	**1E-03**	**1E-03**	**9E-09**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Students**
Exposure Area:	**365S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	2.05E-03	1.76E-03

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	9.50E-02	6.51E-04	3.90E-04	2.51E-04	8.37E-05	1.0E-06	kidney	7E-10	4E-10	3E-10	8E-11	**1E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	1.95E-04		1.67E-04		3.1E-06	NHL+liver	6E-10		5E-10		**1E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0001H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0001H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0001H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0002H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0002H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0002H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0003H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	2.05E-01	N	---	4.68E-02	2.00E+00	---	**2E-02**	1.67E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.35E-01	N	---	7.65E-02	3.00E+01	---	**3E-03**	2.73E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	8.70E-02	Y	---	1.99E-02	7.00E+00	---	**3E-03**	7.09E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	1.80E+00	Y	---	4.11E-01	3.00E+01	---	**1E-02**	1.47E-01	7.80E-06		**1E-06**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	---	8.68E-02	1.00E+02	---	**9E-04**	3.10E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.60E-01	Y	---	3.65E-02	9.77E+01	---	**4E-04**	1.30E-02	2.30E-05		**3E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	4.30E-01	Y	---	9.82E-02	1.00E+03	---	**1E-04**	3.51E-02	2.50E-06		**9E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.70E+00	Y	---	3.88E-01	1.00E+02	---	**4E-03**	1.39E-01	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.10E-01	Y	---	2.51E-02	4.00E+01	---	**6E-04**	8.97E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	2.90E-02	Y	---	6.62E-03	2.00E+00	---	**3E-03**	2.36E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0003H**	**Total Inhalation**	---	**5E-02**	**3E-06**
		Based on NDs only	**0E+00**	**3E-02**	**6E-07**
		Based on Detects only	**#VALUE!**	**3E-02**	**2E-06**
		Site-related only	**0E+00**	**6E-03**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0003H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.90E-02	NA	NA	3.55E-03	1.18E-03	1.0E-06	kidney	---	---	4E-09	1E-09	**5E-09**
TRICHLOROETHENE	79-01-6	2.90E-02	NA		2.36E-03		3.1E-06	NHL+liver	---		7E-09		**7E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0004H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0004H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0004H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0011H**

Pathway:
Inhalation of Outdoor Air

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	1.40E-01	Y	---	3.20E-02	2.00E+00	---	**2E-02**	1.14E-02	3.00E-05	**3E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	1.80E-01	Y	---	4.11E-02	3.00E+01	---	**1E-03**	1.47E-02	5.00E-06	**7E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	---	3.20E-02	7.00E+00	---	**5E-03**	1.14E-02	2.60E-05	**3E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	1.10E+00	Y	---	2.51E-01	3.00E+01	---	**8E-03**	8.97E-02	7.80E-06	**7E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	---	9.59E-02	1.00E+02	---	**1E-03**	3.42E-02	6.00E-06	**2E-07**
CHLOROFORM	67-66-3	1.00E+00	Y	---	2.28E-01	9.77E+01	---	**2E-03**	8.15E-02	2.30E-05	**2E-06**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	9.80E-01	Y	---	2.24E-01	1.00E+03	---	**2E-04**	7.99E-02	2.50E-06	**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	1.80E+00	Y	---	4.11E-01	1.00E+02	---	**4E-03**	1.47E-01	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	5.80E-01	Y	---	1.32E-01	4.00E+01	---	**3E-03**	4.73E-02	2.60E-07	**1E-08**
TRICHLOROETHENE	79-01-6	2.90E-01	Y	---	6.62E-02	2.00E+00	---	**3E-02**	2.36E-02	4.10E-06	M **1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0011H**	**Total Inhalation**	**---**	**7E-02**	**4E-06**
		Based on NDs only	**0E+00**	**0E+00**	**0E+00**
		Based on Detects only	**#VALUE!**	**7E-02**	**4E-06**
		Site-related only	**0E+00**	**4E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0011H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.90E-01	NA	NA	3.55E-02	1.18E-02	1.0E-06	kidney	---	---	4E-08	1E-08	**5E-08**
TRICHLOROETHENE	79-01-6	2.90E-01	NA		2.36E-02		3.1E-06	NHL+liver	---		7E-08		**7E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0012H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0012H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0012H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0013H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0013H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0013H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0025H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0025H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0025H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0026H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	5.53E-01	N	---	1.26E-01	2.00E+00	---	**6E-02**	4.51E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	1.40E-01	Y	---	3.20E-02	3.00E+01	---	**1E-03**	1.14E-02	5.00E-06		**6E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	6.00E-02	Y	---	1.37E-02	7.00E+00	---	**2E-03**	4.89E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	5.30E-01	Y	---	1.21E-01	3.00E+01	---	**4E-03**	4.32E-02	7.80E-06		**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	---	9.59E-02	1.00E+02	---	**1E-03**	3.42E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.10E-01	Y	---	2.51E-02	9.77E+01	---	**3E-04**	8.97E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	1.80E+00	N	---	4.11E-01	7.00E+01	---	**6E-03**	1.47E-01	-		---
ETHYLBENZENE	100-41-4	7.80E-02	Y	---	1.78E-02	1.00E+03	---	**2E-05**	6.36E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	7.00E-01	Y	---	1.60E-01	1.00E+02	---	**2E-03**	5.71E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.00E-01	Y	---	2.28E-02	4.00E+01	---	**6E-04**	8.15E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	1.35E+00	N	---	3.08E-01	2.00E+00	---	**2E-01**	1.10E-01	4.10E-06	M	**6E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0026H**	**Total Inhalation**	---	**2E-01**	**3E-06**
		Based on NDs only	**0E+00**	**2E-01**	**2E-06**
		Based on Detects only	**#VALUE!**	**1E-02**	**1E-06**
		Site-related only	**0E+00**	**2E-01**	**6E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0026H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	---
TRICHLOROETHENE	79-01-6	1.35E+00	NA	NA	1.65E-01	5.50E-02	1.0E-06	kidney	---	---	2E-07	6E-08	**2E-07**
TRICHLOROETHENE	79-01-6	1.35E+00	NA		1.10E-01		3.1E-06	NHL+liver	---		3E-07		**3E-07**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	---

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0027H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0027H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0027H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0029H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0029H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0029H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0030H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	5.53E-01	N	---	1.26E-01	2.00E+00	---	**6E-02**	4.51E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	1.01E+00	N	---	2.31E-01	7.00E+00	---	**3E-02**	8.25E-02	2.60E-05		**2E-06**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	6.71E-01	Y	---	1.53E-01	3.00E+01	---	**5E-03**	5.47E-02	7.80E-06		**4E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	1.57E+00	N	---	3.59E-01	1.00E+02	---	**4E-03**	1.28E-01	6.00E-06		**8E-07**
CHLOROFORM	67-66-3	1.22E+00	N	---	2.79E-01	9.77E+01	---	**3E-03**	9.95E-02	2.30E-05		**2E-06**
ETHYL ACETATE	141-78-6	1.80E+00	N	---	4.11E-01	7.00E+01	---	**6E-03**	1.47E-01	-		---
ETHYLBENZENE	100-41-4	1.10E+00	N	---	2.51E-01	1.00E+03	---	**3E-04**	8.97E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.00E+00	Y	---	2.28E-01	1.00E+02	---	**2E-03**	8.15E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.70E+00	N	---	3.88E-01	4.00E+01	---	**1E-02**	1.39E-01	2.60E-07		**4E-08**
TRICHLOROETHENE	79-01-6	1.35E+00	N	---	3.08E-01	2.00E+00	---	**2E-01**	1.10E-01	4.10E-06	M	**6E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0030H**	**Total Inhalation**	---	**3E-01**	**8E-06**
		Based on NDs only	**0E+00**	**3E-01**	**7E-06**
		Based on Detects only	**#VALUE!**	**7E-03**	**4E-07**
		Site-related only	**0E+00**	**2E-01**	**6E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0030H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.35E+00	NA	NA	1.65E-01	5.50E-02	1.0E-06	kidney	---	---	2E-07	6E-08	**2E-07**
TRICHLOROETHENE	79-01-6	1.35E+00	NA		1.10E-01		3.1E-06	NHL+liver	---		3E-07		**3E-07**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0037H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	1.40E-01	Y	---	3.20E-02	2.00E+00	---	**2E-02**	1.14E-02	3.00E-05		**3E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.70E-01	N	---	8.45E-02	3.00E+01	---	**3E-03**	3.02E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	1.10E-01	Y	---	2.51E-02	7.00E+00	---	**4E-03**	8.97E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	9.60E-01	Y	---	2.19E-01	3.00E+01	---	**7E-03**	7.83E-02	7.80E-06		**6E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	---	9.59E-02	1.00E+02	---	**1E-03**	3.42E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	2.70E-01	Y	---	6.16E-02	9.77E+01	---	**6E-04**	2.20E-02	2.30E-05		**5E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	9.30E-01	Y	---	2.12E-01	1.00E+03	---	**2E-04**	7.58E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.80E+00	Y	---	4.11E-01	1.00E+02	---	**4E-03**	1.47E-01	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.30E-01	Y	---	1.21E-01	4.00E+01	---	**3E-03**	4.32E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	1.50E-01	Y	---	3.42E-02	2.00E+00	---	**2E-02**	1.22E-02	4.10E-06	M	**6E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0037H**	**Total Inhalation**	**---**	**6E-02**	**2E-06**
		Based on NDs only	**0E+00**	**3E-03**	**2E-07**
		Based on Detects only	**#VALUE!**	**5E-02**	**2E-06**
		Site-related only	**0E+00**	**2E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0037H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.50E-01	NA	NA	1.83E-02	6.12E-03	1.0E-06	kidney	---	---	2E-08	6E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.50E-01	NA		1.22E-02		3.1E-06	NHL+liver	---		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0040H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0040H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0040H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0041H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0041H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0041H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0045S**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0045S**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0045S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0047H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0047H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0047H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0050H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0050H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0050H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0051H**

Pathway:
Inhalation of Outdoor Air

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	2.00E-01	N	---	4.57E-02	2.00E+00	---	**2E-02**	1.63E-02	3.00E-05	**5E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	4.20E-01	Y	---	9.59E-02	3.00E+01	---	**3E-03**	3.42E-02	5.00E-06	**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	6.30E-02	Y	---	1.44E-02	7.00E+00	---	**2E-03**	5.14E-03	2.60E-05	**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	5.30E-01	Y	---	1.21E-01	3.00E+01	---	**4E-03**	4.32E-02	7.80E-06	**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	---	1.05E-01	1.00E+02	---	**1E-03**	3.75E-02	6.00E-06	**2E-07**
CHLOROFORM	67-66-3	1.60E-01	Y	---	3.65E-02	9.77E+01	---	**4E-04**	1.30E-02	2.30E-05	**3E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	1.30E-01	Y	---	2.97E-02	1.00E+03	---	**3E-05**	1.06E-02	2.50E-06	**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	5.50E-01	Y	---	1.26E-01	1.00E+02	---	**1E-03**	4.48E-02	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	2.00E-01	Y	---	4.57E-02	4.00E+01	---	**1E-03**	1.63E-02	2.60E-07	**4E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M **1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0051H**	**Total Inhalation**	**---**	**6E-02**	**2E-06**
		Based on NDs only	**0E+00**	**5E-02**	**6E-07**
		Based on Detects only	**#VALUE!**	**1E-02**	**1E-06**
		Site-related only	**0E+00**	**3E-02**	**3E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0051H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0052H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0052H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0052H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0053H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0053H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0053H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0054H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0054H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0054H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0055H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0055H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0055H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0056H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0056H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0056H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0058H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0058H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0058H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0059H**

Pathway:
Inhalation of Outdoor Air

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	2.20E-01	N	---	5.02E-02	2.00E+00	---	**3E-02**	1.79E-02	3.00E-05	**5E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	3.60E-01	N	---	8.22E-02	3.00E+01	---	**3E-03**	2.94E-02	5.00E-06	**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	9.20E-02	Y	---	2.10E-02	7.00E+00	---	**3E-03**	7.50E-03	2.60E-05	**2E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	8.30E-01	Y	---	1.89E-01	3.00E+01	---	**6E-03**	6.77E-02	7.80E-06	**5E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	---	9.59E-02	1.00E+02	---	**1E-03**	3.42E-02	6.00E-06	**2E-07**
CHLOROFORM	67-66-3	1.00E-01	N	---	2.28E-02	9.77E+01	---	**2E-04**	8.15E-03	2.30E-05	**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	5.40E-01	Y	---	1.23E-01	1.00E+03	---	**1E-04**	4.40E-02	2.50E-06	**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	1.10E+00	Y	---	2.51E-01	1.00E+02	---	**3E-03**	8.97E-02	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.50E-01	Y	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07	**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M **1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0059H**	**Total Inhalation**	**---**	**7E-02**	**2E-06**
		Based on NDs only	**0E+00**	**6E-02**	**1E-06**
		Based on Detects only	**#VALUE!**	**1E-02**	**1E-06**
		Site-related only	**0E+00**	**3E-02**	**3E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0059H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0060H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0060H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0060H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0061H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0061H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0061H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0062H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0062H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0062H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0063H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	NA		---	---	2.00E+00	---	---	---	3.00E-05		---
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	NA		---	---	3.00E+01	---	---	---	5.00E-06		---
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	NA		---	---	7.00E+00	---	---	---	2.60E-05		---
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	NA		---	---	3.00E+01	---	---	---	7.80E-06		---
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	NA		---	---	1.00E+02	---	---	---	6.00E-06		---
CHLOROFORM	67-66-3	NA		---	---	9.77E+01	---	---	---	2.30E-05		---
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	NA		---	---	1.00E+03	---	---	---	2.50E-06		---
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	NA		---	---	1.00E+02	---	---	---	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.50E-01	N	---	7.99E-02	4.00E+01	---	**2E-03**	2.85E-02	2.60E-07		**7E-09**
TRICHLOROETHENE	79-01-6	2.50E-01	N	---	5.71E-02	2.00E+00	---	**3E-02**	2.04E-02	4.10E-06	M	**1E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0063H**	**Total Inhalation**	---	**3E-02**	**1E-07**
		Based on NDs only	**0E+00**	**3E-02**	**1E-07**
		Based on Detects only	**#VALUE!**	**All ND**	**All ND**
		Site-related only	**0E+00**	**3E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0063H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	2.50E-01	NA	NA	3.06E-02	1.02E-02	1.0E-06	kidney	---	---	3E-08	1E-08	**4E-08**
TRICHLOROETHENE	79-01-6	2.50E-01	NA		2.04E-02		3.1E-06	NHL+liver	---		6E-08		**6E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0064H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	1.70E-01	N	---	3.88E-02	2.00E+00	---	**2E-02**	1.39E-02	3.00E-05		**4E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	2.80E-01	N	---	6.39E-02	3.00E+01	---	**2E-03**	2.28E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	9.90E-02	Y	---	2.26E-02	7.00E+00	---	**3E-03**	8.07E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	4.60E-01	Y	---	1.05E-01	3.00E+01	---	**4E-03**	3.75E-02	7.80E-06		**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	---	9.13E-02	1.00E+02	---	**9E-04**	3.26E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	8.90E-02	Y	---	2.03E-02	9.77E+01	---	**2E-04**	7.26E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	7.40E-01	Y	---	1.69E-01	1.00E+03	---	**2E-04**	6.03E-02	2.50E-06		**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	3.10E+00	Y	---	7.08E-01	1.00E+02	---	**7E-03**	2.53E-01	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	5.10E-01	Y	---	1.16E-01	4.00E+01	---	**3E-03**	4.16E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	3.40E-02	Y	---	7.76E-03	2.00E+00	---	**4E-03**	2.77E-03	4.10E-06	M	**1E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0064H**	**Total Inhalation**	---	**4E-02**	**2E-06**
		Based on NDs only	**0E+00**	**2E-02**	**5E-07**
		Based on Detects only	**#VALUE!**	**2E-02**	**1E-06**
		Site-related only	**0E+00**	**9E-03**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0064H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	3.40E-02	NA	NA	4.16E-03	1.39E-03	1.0E-06	kidney	---	---	4E-09	1E-09	**6E-09**
TRICHLOROETHENE	79-01-6	3.40E-02	NA		2.77E-03		3.1E-06	NHL+liver	---		9E-09		**9E-09**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0065H**

Pathway:
Inhalation of Outdoor Air

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	2.15E-01	N	---	4.91E-02	2.00E+00	---	**2E-02**	1.75E-02	3.00E-05	**5E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	3.55E-01	N	---	8.11E-02	3.00E+01	---	**3E-03**	2.89E-02	5.00E-06	**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	7.00E-02	Y	---	1.60E-02	7.00E+00	---	**2E-03**	5.71E-03	2.60E-05	**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	7.60E-01	Y	---	1.74E-01	3.00E+01	---	**6E-03**	6.20E-02	7.80E-06	**5E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.10E-01	Y	---	9.36E-02	1.00E+02	---	**9E-04**	3.34E-02	6.00E-06	**2E-07**
CHLOROFORM	67-66-3	9.50E-02	N	---	2.17E-02	9.77E+01	---	**2E-04**	7.75E-03	2.30E-05	**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	2.70E-01	Y	---	6.16E-02	1.00E+03	---	**6E-05**	2.20E-02	2.50E-06	**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	1.00E+00	Y	---	2.28E-01	1.00E+02	---	**2E-03**	8.15E-02	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	8.30E-02	Y	---	1.89E-02	4.00E+01	---	**5E-04**	6.77E-03	2.60E-07	**2E-09**
TRICHLOROETHENE	79-01-6	1.05E-01	N	---	2.40E-02	2.00E+00	---	**1E-02**	8.56E-03	4.10E-06	M **4E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0065H**	**Total Inhalation**	---	**5E-02**	**2E-06**
		Based on NDs only	**0E+00**	**4E-02**	**9E-07**
		Based on Detects only	**#VALUE!**	**1E-02**	**9E-07**
		Site-related only	**0E+00**	**2E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0065H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.05E-01	NA	NA	1.28E-02	4.28E-03	1.0E-06	kidney	---	---	1E-08	4E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.05E-01	NA		8.56E-03		3.1E-06	NHL+liver	---		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0066H**

Pathway:
Inhalation of Outdoor Air

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	1.95E-01	N	---	4.45E-02	2.00E+00	---	**2E-02**	1.59E-02	3.00E-05	**5E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	3.15E-01	N	---	7.19E-02	3.00E+01	---	**2E-03**	2.57E-02	5.00E-06	**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	1.30E-01	Y	---	2.97E-02	7.00E+00	---	**4E-03**	1.06E-02	2.60E-05	**3E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	6.80E-01	Y	---	1.55E-01	3.00E+01	---	**5E-03**	5.54E-02	7.80E-06	**4E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	---	9.82E-02	1.00E+02	---	**1E-03**	3.51E-02	6.00E-06	**2E-07**
CHLOROFORM	67-66-3	1.10E-01	Y	---	2.51E-02	9.77E+01	---	**3E-04**	8.97E-03	2.30E-05	**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	3.40E+00	Y	---	7.76E-01	1.00E+03	---	**8E-04**	2.77E-01	2.50E-06	**7E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	8.00E+00	Y	---	1.83E+00	1.00E+02	---	**2E-02**	6.52E-01	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	9.90E-02	Y	---	2.26E-02	4.00E+01	---	**6E-04**	8.07E-03	2.60E-07	**2E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	N	---	2.17E-02	2.00E+00	---	**1E-02**	7.75E-03	4.10E-06	M **4E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	**HI_{adult}**	**$Risk_{lifetime}$**
Outdoor Worker	**0066H**	**Total Inhalation**	**---**	**7E-02**	**2E-06**
		Based on NDs only	**0E+00**	**4E-02**	**6E-07**
		Based on Detects only	**#VALUE!**	**3E-02**	**2E-06**
		Site-related only	**0E+00**	**1E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0066H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	NA	NA	1.16E-02	3.87E-03	1.0E-06	kidney	---	---	1E-08	4E-09	**2E-08**
TRICHLOROETHENE	79-01-6	9.50E-02	NA		7.75E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0071H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	2.30E-01	N	---	5.25E-02	2.00E+00	---	**3E-02**	1.88E-02	3.00E-05		**6E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.70E-01	N	---	8.45E-02	3.00E+01	---	**3E-03**	3.02E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	5.60E-02	Y	---	1.28E-02	7.00E+00	---	**2E-03**	4.57E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	5.00E-01	Y	---	1.14E-01	3.00E+01	---	**4E-03**	4.08E-02	7.80E-06		**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	---	9.82E-02	1.00E+02	---	**1E-03**	3.51E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.10E-01	Y	---	2.51E-02	9.77E+01	---	**3E-04**	8.97E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.10E-01	Y	---	2.51E-02	1.00E+03	---	**3E-05**	8.97E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	3.90E-01	Y	---	8.90E-02	1.00E+02	---	**9E-04**	3.18E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.70E-01	Y	---	3.88E-02	4.00E+01	---	**1E-03**	1.39E-02	2.60E-07		**4E-09**
TRICHLOROETHENE	79-01-6	1.10E-01	N	---	2.51E-02	2.00E+00	---	**1E-02**	8.97E-03	4.10E-06	M	**5E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0071H**	**Total Inhalation**	---	**5E-02**	**2E-06**
		Based on NDs only	**0E+00**	**4E-02**	**8E-07**
		Based on Detects only	**#VALUE!**	**9E-03**	**9E-07**
		Site-related only	**0E+00**	**2E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0071H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.10E-01	NA	NA	1.35E-02	4.48E-03	1.0E-06	kidney	---	---	1E-08	4E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.10E-01	NA		8.97E-03		3.1E-06	NHL+liver	---		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0076H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	2.00E-01	N	---	4.57E-02	2.00E+00	---	**2E-02**	1.63E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.30E-01	N	---	7.53E-02	3.00E+01	---	**3E-03**	2.69E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	6.70E-02	Y	---	1.53E-02	7.00E+00	---	**2E-03**	5.46E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	5.30E-01	Y	---	1.21E-01	3.00E+01	---	**4E-03**	4.32E-02	7.80E-06		**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.70E-01	Y	---	1.07E-01	1.00E+02	---	**1E-03**	3.83E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	8.20E-02	Y	---	1.87E-02	9.77E+01	---	**2E-04**	6.69E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	8.30E-02	Y	---	1.89E-02	1.00E+03	---	**2E-05**	6.77E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	3.00E-01	Y	---	6.85E-02	1.00E+02	---	**7E-04**	2.45E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.25E-01	N	---	2.85E-02	4.00E+01	---	**7E-04**	1.02E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	N	---	2.28E-02	2.00E+00	---	**1E-02**	8.15E-03	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0076H**	**Total Inhalation**	**---**	**5E-02**	**2E-06**
		Based on NDs only	**0E+00**	**4E-02**	**7E-07**
		Based on Detects only	**#VALUE!**	**8E-03**	**9E-07**
		Site-related only	**0E+00**	**1E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0076H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME	RME
	child	adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	NA	NA	1.22E-02	4.08E-03	1.0E-06	kidney	---	---	1E-08	4E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.00E-01	NA		8.15E-03		3.1E-06	NHL+liver	---		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0091H**

Pathway:
Inhalation of Outdoor Air

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	2.05E-01	N	---	4.68E-02	2.00E+00	---	**2E-02**	1.67E-02	3.00E-05	**5E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	4.40E-01	Y	---	1.00E-01	3.00E+01	---	**3E-03**	3.59E-02	5.00E-06	**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	4.00E-02	Y	---	9.13E-03	7.00E+00	---	**1E-03**	3.26E-03	2.60E-05	**8E-08**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	6.80E-01	Y	---	1.55E-01	3.00E+01	---	**5E-03**	5.54E-02	7.80E-06	**4E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	---	1.05E-01	1.00E+02	---	**1E-03**	3.75E-02	6.00E-06	**2E-07**
CHLOROFORM	67-66-3	3.30E-01	Y	---	7.53E-02	9.77E+01	---	**8E-04**	2.69E-02	2.30E-05	**6E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	2.10E-01	Y	---	4.79E-02	1.00E+03	---	**5E-05**	1.71E-02	2.50E-06	**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	8.00E-01	Y	---	1.83E-01	1.00E+02	---	**2E-03**	6.52E-02	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	1.90E-01	Y	---	4.34E-02	4.00E+01	---	**1E-03**	1.55E-02	2.60E-07	**4E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	N	---	2.28E-02	2.00E+00	---	**1E-02**	8.15E-03	4.10E-06	M **4E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0091H**	**Total Inhalation**	**---**	**5E-02**	**2E-06**
		Based on NDs only	**0E+00**	**3E-02**	**5E-07**
		Based on Detects only	**#VALUE!**	**1E-02**	**2E-06**
		Site-related only	**0E+00**	**2E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0091H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	NA	NA	1.22E-02	4.08E-03	1.0E-06	kidney	---	---	1E-08	4E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.00E-01	NA		8.15E-03		3.1E-06	NHL+liver	---		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0098H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	2.10E-01	N	---	4.79E-02	2.00E+00	---	**2E-02**	1.71E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.45E-01	N	---	7.88E-02	3.00E+01	---	**3E-03**	2.81E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	---	3.20E-02	7.00E+00	---	**5E-03**	1.14E-02	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	7.60E-01	Y	---	1.74E-01	3.00E+01	---	**6E-03**	6.20E-02	7.80E-06		**5E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	---	1.03E-01	1.00E+02	---	**1E-03**	3.67E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.30E-01	Y	---	2.97E-02	9.77E+01	---	**3E-04**	1.06E-02	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	3.40E+00	Y	---	7.76E-01	1.00E+03	---	**8E-04**	2.77E-01	2.50E-06		**7E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	7.90E+00	Y	---	1.80E+00	1.00E+02	---	**2E-02**	6.44E-01	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.30E-01	Y	---	2.97E-02	4.00E+01	---	**7E-04**	1.06E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	N	---	2.28E-02	2.00E+00	---	**1E-02**	8.15E-03	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0098H**	**Total Inhalation**	---	**7E-02**	**3E-06**
		Based on NDs only	**0E+00**	**4E-02**	**7E-07**
		Based on Detects only	**#VALUE!**	**3E-02**	**2E-06**
		Site-related only	**0E+00**	**1E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0098H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	NA	NA	1.22E-02	4.08E-03	1.0E-06	kidney	---	---	1E-08	4E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.00E-01	NA		8.15E-03		3.1E-06	NHL+liver	---		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0102H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	1.85E-01	N	---	4.22E-02	2.00E+00	---	**2E-02**	1.51E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.00E-01	N	---	6.85E-02	3.00E+01	---	**2E-03**	2.45E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	7.00E-02	N	---	1.60E-02	7.00E+00	---	**2E-03**	5.71E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	3.60E-01	Y	---	8.22E-02	3.00E+01	---	**3E-03**	2.94E-02	7.80E-06		**2E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	---	1.03E-01	1.00E+02	---	**1E-03**	3.67E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	3.30E-01	Y	---	7.53E-02	9.77E+01	---	**8E-04**	2.69E-02	2.30E-05		**6E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	7.00E-02	N	---	1.60E-02	1.00E+03	---	**2E-05**	5.71E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	3.50E-01	Y	---	7.99E-02	1.00E+02	---	**8E-04**	2.85E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.15E-01	N	---	2.63E-02	4.00E+01	---	**7E-04**	9.38E-03	2.60E-07		**2E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	N	---	2.05E-02	2.00E+00	---	**1E-02**	7.34E-03	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0102H**	**Total Inhalation**	---	**4E-02**	**2E-06**
		Based on NDs only	**0E+00**	**4E-02**	**8E-07**
		Based on Detects only	**#VALUE!**	**5E-03**	**1E-06**
		Site-related only	**0E+00**	**1E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0102H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.00E-02	NA	NA	1.10E-02	3.67E-03	1.0E-06	kidney	---	---	1E-08	4E-09	**1E-08**
TRICHLOROETHENE	79-01-6	9.00E-02	NA		7.34E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0118H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	2.10E-01	N	---	4.79E-02	2.00E+00	---	**2E-02**	1.71E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.45E-01	N	---	7.88E-02	3.00E+01	---	**3E-03**	2.81E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	7.50E-02	N	---	1.71E-02	7.00E+00	---	**2E-03**	6.12E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	5.30E-01	Y	---	1.21E-01	3.00E+01	---	**4E-03**	4.32E-02	7.80E-06		**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	---	1.00E-01	1.00E+02	---	**1E-03**	3.59E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	9.40E-02	Y	---	2.15E-02	9.77E+01	---	**2E-04**	7.66E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.20E-01	Y	---	2.74E-02	1.00E+03	---	**3E-05**	9.78E-03	2.50E-06		**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	4.50E-01	Y	---	1.03E-01	1.00E+02	---	**1E-03**	3.67E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.40E-01	Y	---	3.20E-02	4.00E+01	---	**8E-04**	1.14E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	N	---	2.28E-02	2.00E+00	---	**1E-02**	8.15E-03	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0118H**	**Total Inhalation**	---	**5E-02**	**2E-06**
		Based on NDs only	**0E+00**	**4E-02**	**9E-07**
		Based on Detects only	**#VALUE!**	**7E-03**	**8E-07**
		Site-related only	**0E+00**	**1E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0118H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	NA	NA	1.22E-02	4.08E-03	1.0E-06	kidney	---	---	1E-08	4E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.00E-01	NA		8.15E-03		3.1E-06	NHL+liver	---		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0121H**

Pathway:
Inhalation of Outdoor Air

		RME child	RME adult			RME lifetime		
	TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02		

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	1.90E-01	N	---	4.34E-02	2.00E+00	---	**2E-02**	1.55E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.15E-01	N	---	7.19E-02	3.00E+01	---	**2E-03**	2.57E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	1.50E-01	Y	---	3.42E-02	7.00E+00	---	**5E-03**	1.22E-02	2.60E-05		**3E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	8.50E-01	Y	---	1.94E-01	3.00E+01	---	**6E-03**	6.93E-02	7.80E-06		**5E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.60E-01	Y	---	8.22E-02	1.00E+02	---	**8E-04**	2.94E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.20E-01	Y	---	2.74E-02	9.77E+01	---	**3E-04**	9.78E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.40E+00	Y	---	5.48E-01	1.00E+03	---	**5E-04**	1.96E-01	2.50E-06		**5E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	5.10E+00	Y	---	1.16E+00	1.00E+02	---	**1E-02**	4.16E-01	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.40E-01	Y	---	3.20E-02	4.00E+01	---	**8E-04**	1.14E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	N	---	2.17E-02	2.00E+00	---	**1E-02**	7.75E-03	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0121H**	**Total Inhalation**	---	**6E-02**	**2E-06**
		Based on NDs only	**0E+00**	**3E-02**	**6E-07**
		Based on Detects only	**#VALUE!**	**3E-02**	**2E-06**
		Site-related only	**0E+00**	**1E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0121H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	NA	NA	1.16E-02	3.87E-03	1.0E-06	kidney	---	---	1E-08	4E-09	**2E-08**
TRICHLOROETHENE	79-01-6	9.50E-02	NA		7.75E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0122H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	2.00E-01	N	---	4.57E-02	2.00E+00	---	**2E-02**	1.63E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.30E-01	N	---	7.53E-02	3.00E+01	---	**3E-03**	2.69E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	6.20E-02	Y	---	1.42E-02	7.00E+00	---	**2E-03**	5.06E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	7.00E-01	Y	---	1.60E-01	3.00E+01	---	**5E-03**	5.71E-02	7.80E-06		**4E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.50E-01	Y	---	1.03E-01	1.00E+02	---	**1E-03**	3.67E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	9.80E-02	Y	---	2.24E-02	9.77E+01	---	**2E-04**	7.99E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.50E+00	Y	---	5.71E-01	1.00E+03	---	**6E-04**	2.04E-01	2.50E-06		**5E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	7.20E+00	Y	---	1.64E+00	1.00E+02	---	**2E-02**	5.87E-01	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.80E-01	Y	---	4.11E-02	4.00E+01	---	**1E-03**	1.47E-02	2.60E-07		**4E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	N	---	2.28E-02	2.00E+00	---	**1E-02**	8.15E-03	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0122H**	**Total Inhalation**	---	**6E-02**	**2E-06**
		Based on NDs only	**0E+00**	**4E-02**	**7E-07**
		Based on Detects only	**#VALUE!**	**3E-02**	**1E-06**
		Site-related only	**0E+00**	**1E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0122H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	NA	NA	1.22E-02	4.08E-03	1.0E-06	kidney	---	---	1E-08	4E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.00E-01	NA		8.15E-03		3.1E-06	NHL+liver	---		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0135H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	1.90E-01	N	---	4.34E-02	2.00E+00	---	**2E-02**	1.55E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.10E-01	N	---	7.08E-02	3.00E+01	---	**2E-03**	2.53E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	7.00E-02	N	---	1.60E-02	7.00E+00	---	**2E-03**	5.71E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	5.80E-01	Y	---	1.32E-01	3.00E+01	---	**4E-03**	4.73E-02	7.80E-06		**4E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.60E-01	Y	---	1.05E-01	1.00E+02	---	**1E-03**	3.75E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	1.10E-01	Y	---	2.51E-02	9.77E+01	---	**3E-04**	8.97E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	1.60E-01	Y	---	3.65E-02	1.00E+03	---	**4E-05**	1.30E-02	2.50E-06		**3E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	5.20E-01	Y	---	1.19E-01	1.00E+02	---	**1E-03**	4.24E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.50E-01	Y	---	3.42E-02	4.00E+01	---	**9E-04**	1.22E-02	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	N	---	2.05E-02	2.00E+00	---	**1E-02**	7.34E-03	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0135H**	**Total Inhalation**	---	**4E-02**	**2E-06**
		Based on NDs only	**0E+00**	**4E-02**	**8E-07**
		Based on Detects only	**#VALUE!**	**8E-03**	**8E-07**
		Site-related only	**0E+00**	**1E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0135H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.00E-02	NA	NA	1.10E-02	3.67E-03	1.0E-06	kidney	---	---	1E-08	4E-09	**1E-08**
TRICHLOROETHENE	79-01-6	9.00E-02	NA		7.34E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0139H**

Pathway:
Inhalation of Outdoor Air

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	2.30E-01	N	---	5.25E-02	2.00E+00	---	**3E-02**	1.88E-02	3.00E-05	**6E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	3.70E-01	N	---	8.45E-02	3.00E+01	---	**3E-03**	3.02E-02	5.00E-06	**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	6.10E-02	Y	---	1.39E-02	7.00E+00	---	**2E-03**	4.97E-03	2.60E-05	**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	5.10E-01	Y	---	1.16E-01	3.00E+01	---	**4E-03**	4.16E-02	7.80E-06	**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.00E-01	Y	---	9.13E-02	1.00E+02	---	**9E-04**	3.26E-02	6.00E-06	**2E-07**
CHLOROFORM	67-66-3	7.70E-02	Y	---	1.76E-02	9.77E+01	---	**2E-04**	6.28E-03	2.30E-05	**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	8.00E-02	Y	---	1.83E-02	1.00E+03	---	**2E-05**	6.52E-03	2.50E-06	**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	2.90E-01	Y	---	6.62E-02	1.00E+02	---	**7E-04**	2.36E-02	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	1.40E-01	N	---	3.20E-02	4.00E+01	---	**8E-04**	1.14E-02	2.60E-07	**3E-09**
TRICHLOROETHENE	79-01-6	1.10E-01	N	---	2.51E-02	2.00E+00	---	**1E-02**	8.97E-03	4.10E-06	M **5E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0139H**	**Total Inhalation**	---	**5E-02**	**2E-06**
		Based on NDs only	**0E+00**	**4E-02**	**8E-07**
		Based on Detects only	**#VALUE!**	**8E-03**	**8E-07**
		Site-related only	**0E+00**	**2E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0139H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.10E-01	NA	NA	1.35E-02	4.48E-03	1.0E-06	kidney	---	---	1E-08	4E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.10E-01	NA		8.97E-03		3.1E-06	NHL+liver	---		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0146H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	1.95E-01	N	---	4.45E-02	2.00E+00	---	**2E-02**	1.59E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	1.80E-01	Y	---	4.11E-02	3.00E+01	---	**1E-03**	1.47E-02	5.00E-06		**7E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	5.50E-02	Y	---	1.26E-02	7.00E+00	---	**2E-03**	4.48E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	4.20E-01	Y	---	9.59E-02	3.00E+01	---	**3E-03**	3.42E-02	7.80E-06		**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.20E-01	Y	---	9.59E-02	1.00E+02	---	**1E-03**	3.42E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	7.60E-02	Y	---	1.74E-02	9.77E+01	---	**2E-04**	6.20E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	7.10E-02	Y	---	1.62E-02	1.00E+03	---	**2E-05**	5.79E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	2.40E-01	Y	---	5.48E-02	1.00E+02	---	**5E-04**	1.96E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.20E-01	N	---	2.74E-02	4.00E+01	---	**7E-04**	9.78E-03	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	N	---	2.17E-02	2.00E+00	---	**1E-02**	7.75E-03	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0146H**	**Total Inhalation**	**---**	**4E-02**	**1E-06**
		Based on NDs only	**0E+00**	**3E-02**	**5E-07**
		Based on Detects only	**#VALUE!**	**8E-03**	**8E-07**
		Site-related only	**0E+00**	**1E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0146H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	NA	NA	1.16E-02	3.87E-03	1.0E-06	kidney	---	---	1E-08	4E-09	**2E-08**
TRICHLOROETHENE	79-01-6	9.50E-02	NA		7.75E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0148H**

Pathway:
Inhalation of Outdoor Air

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	2.05E-01	N	---	4.68E-02	2.00E+00	---	**2E-02**	1.67E-02	3.00E-05	**5E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	2.60E-01	Y	---	5.94E-02	3.00E+01	---	**2E-03**	2.12E-02	5.00E-06	**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	1.40E-01	Y	---	3.20E-02	7.00E+00	---	**5E-03**	1.14E-02	2.60E-05	**3E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	7.20E-01	Y	---	1.64E-01	3.00E+01	---	**5E-03**	5.87E-02	7.80E-06	**5E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	---	9.82E-02	1.00E+02	---	**1E-03**	3.51E-02	6.00E-06	**2E-07**
CHLOROFORM	67-66-3	1.30E-01	Y	---	2.97E-02	9.77E+01	---	**3E-04**	1.06E-02	2.30E-05	**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	3.80E+00	Y	---	8.68E-01	1.00E+03	---	**9E-04**	3.10E-01	2.50E-06	**8E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	9.00E+00	Y	---	2.05E+00	1.00E+02	---	**2E-02**	7.34E-01	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	1.50E-01	Y	---	3.42E-02	4.00E+01	---	**9E-04**	1.22E-02	2.60E-07	**3E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	N	---	2.28E-02	2.00E+00	---	**1E-02**	8.15E-03	4.10E-06	M **4E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0148H**	**Total Inhalation**	**---**	**7E-02**	**3E-06**
		Based on NDs only	**0E+00**	**3E-02**	**5E-07**
		Based on Detects only	**#VALUE!**	**4E-02**	**2E-06**
		Site-related only	**0E+00**	**1E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0148H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	NA	NA	1.22E-02	4.08E-03	1.0E-06	kidney	---	---	1E-08	4E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.00E-01	NA		8.15E-03		3.1E-06	NHL+liver	---		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0153H**

Pathway:
Inhalation of Outdoor Air

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	2.05E-01	N	---	4.68E-02	2.00E+00	---	**2E-02**	1.67E-02	3.00E-05	**5E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	1.10E-01	Y	---	2.51E-02	3.00E+01	---	**8E-04**	8.97E-03	5.00E-06	**4E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	9.60E-02	Y	---	2.19E-02	7.00E+00	---	**3E-03**	7.83E-03	2.60E-05	**2E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	7.40E-01	Y	---	1.69E-01	3.00E+01	---	**6E-03**	6.03E-02	7.80E-06	**5E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	---	1.00E-01	1.00E+02	---	**1E-03**	3.59E-02	6.00E-06	**2E-07**
CHLOROFORM	67-66-3	1.20E-01	Y	---	2.74E-02	9.77E+01	---	**3E-04**	9.78E-03	2.30E-05	**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	4.70E+00	Y	---	1.07E+00	1.00E+03	---	**1E-03**	3.83E-01	2.50E-06	**1E-06**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	1.20E+01	Y	---	2.74E+00	1.00E+02	---	**3E-02**	9.78E-01	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	2.00E-01	Y	---	4.57E-02	4.00E+01	---	**1E-03**	1.63E-02	2.60E-07	**4E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	N	---	2.28E-02	2.00E+00	---	**1E-02**	8.15E-03	4.10E-06	M **4E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0153H**	**Total Inhalation**	**---**	**8E-02**	**3E-06**
		Based on NDs only	**0E+00**	**3E-02**	**5E-07**
		Based on Detects only	**#VALUE!**	**4E-02**	**2E-06**
		Site-related only	**0E+00**	**1E-02**	**9E-08**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0153H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	NA	NA	1.22E-02	4.08E-03	1.0E-06	kidney	---	---	1E-08	4E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.00E-01	NA		8.15E-03		3.1E-06	NHL+liver	---		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0162H**

Pathway:
Inhalation of Outdoor Air

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	**---**	**---**	---	5.80E-05	**---**
1,3-BUTADIENE	106-99-0	1.90E-01	N	---	4.34E-02	2.00E+00	**---**	**2E-02**	1.55E-02	3.00E-05	**5E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	**---**	**---**	---	4.90E-05	**---**
1,4-DIOXANE	123-91-1	3.10E-01	N	---	7.08E-02	3.00E+01	**---**	**2E-03**	2.53E-02	5.00E-06	**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	**---**	**---**	---	1.60E-05	**---**
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	**---**	**---**	---	-	**---**
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	**---**	**---**	---	6.00E-04	**---**
1,2-DICHLOROETHANE	107-06-2	6.80E-02	Y	---	1.55E-02	7.00E+00	**---**	**2E-03**	5.54E-03	2.60E-05	**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	**---**	**---**	---	3.70E-06	**---**
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	**---**	**---**	---	-	**---**
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	**---**	**---**	---	1.10E-05	**---**
BENZENE	71-43-2	5.10E-01	Y	---	1.16E-01	3.00E+01	**---**	**4E-03**	4.16E-02	7.80E-06	**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	**---**	**---**	---	3.70E-05	**---**
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	**---**	**---**	---	-	**---**
CARBON TETRACHLORIDE	56-23-5	4.30E-01	Y	---	9.82E-02	1.00E+02	**---**	**1E-03**	3.51E-02	6.00E-06	**2E-07**
CHLOROFORM	67-66-3	9.80E-02	Y	---	2.24E-02	9.77E+01	**---**	**2E-04**	7.99E-03	2.30E-05	**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	**---**	**---**	---	-	**---**
ETHYLBENZENE	100-41-4	1.20E-01	Y	---	2.74E-02	1.00E+03	**---**	**3E-05**	9.78E-03	2.50E-06	**2E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	**---**	**---**	---	2.20E-05	**---**
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
M,P-XYLENE	108-38-3	4.00E-01	Y	---	9.13E-02	1.00E+02	**---**	**9E-04**	3.26E-02	-	**---**
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	**---**	**---**	---	1.00E-08	M **---**
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	**---**	**---**	---	3.40E-05	**---**
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	**---**	**---**	---	-	**---**
TETRACHLOROETHENE	127-18-4	2.70E-01	Y	---	6.16E-02	4.00E+01	**---**	**2E-03**	2.20E-02	2.60E-07	**6E-09**
TRICHLOROETHENE	79-01-6	9.00E-02	N	---	2.05E-02	2.00E+00	**---**	**1E-02**	7.34E-03	4.10E-06	M **4E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	**---**	**---**	---	-	**---**
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	**---**	**---**	---	4.40E-06	M **---**

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0162H**	**Total Inhalation**	**---**	**4E-02**	**2E-06**
		Based on NDs only	**0E+00**	**3E-02**	**6E-07**
		Based on Detects only	**#VALUE!**	**1E-02**	**9E-07**
		Site-related only	**0E+00**	**1E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0162H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.00E-02	NA	NA	1.10E-02	3.67E-03	1.0E-06	kidney	---	---	1E-08	4E-09	**1E-08**
TRICHLOROETHENE	79-01-6	9.00E-02	NA		7.34E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0173H**

Pathway:
Inhalation of Outdoor Air

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	2.00E-01	N	---	4.57E-02	2.00E+00	---	**2E-02**	1.63E-02	3.00E-05	**5E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	3.30E-01	N	---	7.53E-02	3.00E+01	---	**3E-03**	2.69E-02	5.00E-06	**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	5.40E-02	Y	---	1.23E-02	7.00E+00	---	**2E-03**	4.40E-03	2.60E-05	**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	5.10E-01	Y	---	1.16E-01	3.00E+01	---	**4E-03**	4.16E-02	7.80E-06	**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	---	1.00E-01	1.00E+02	---	**1E-03**	3.59E-02	6.00E-06	**2E-07**
CHLOROFORM	67-66-3	7.20E-02	Y	---	1.64E-02	9.77E+01	---	**2E-04**	5.87E-03	2.30E-05	**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	7.10E-02	Y	---	1.62E-02	1.00E+03	---	**2E-05**	5.79E-03	2.50E-06	**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	2.50E-01	Y	---	5.71E-02	1.00E+02	---	**6E-04**	2.04E-02	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	1.25E-01	N	---	2.85E-02	4.00E+01	---	**7E-04**	1.02E-02	2.60E-07	**3E-09**
TRICHLOROETHENE	79-01-6	1.00E-01	N	---	2.28E-02	2.00E+00	---	**1E-02**	8.15E-03	4.10E-06	M **4E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0173H**	**Total Inhalation**	**---**	**4E-02**	**1E-06**
		Based on NDs only	**0E+00**	**4E-02**	**7E-07**
		Based on Detects only	**#VALUE!**	**7E-03**	**8E-07**
		Site-related only	**0E+00**	**1E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0173H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.00E-01	NA	NA	1.22E-02	4.08E-03	1.0E-06	kidney	---	---	1E-08	4E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.00E-01	NA		8.15E-03		3.1E-06	NHL+liver	---		3E-08		**3E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0174H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	1.95E-01	N	---	4.45E-02	2.00E+00	---	**2E-02**	1.59E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.15E-01	N	---	7.19E-02	3.00E+01	---	**2E-03**	2.57E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	5.50E-02	Y	---	1.26E-02	7.00E+00	---	**2E-03**	4.48E-03	2.60E-05		**1E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	4.10E-01	Y	---	9.36E-02	3.00E+01	---	**3E-03**	3.34E-02	7.80E-06		**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.40E-01	Y	---	1.00E-01	1.00E+02	---	**1E-03**	3.59E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	7.00E-02	Y	---	1.60E-02	9.77E+01	---	**2E-04**	5.71E-03	2.30E-05		**1E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	6.70E-02	Y	---	1.53E-02	1.00E+03	---	**2E-05**	5.46E-03	2.50E-06		**1E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	2.30E-01	Y	---	5.25E-02	1.00E+02	---	**5E-04**	1.88E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.20E-01	N	---	2.74E-02	4.00E+01	---	**7E-04**	9.78E-03	2.60E-07		**3E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	N	---	2.17E-02	2.00E+00	---	**1E-02**	7.75E-03	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0174H**	**Total Inhalation**	---	**4E-02**	**1E-06**
		Based on NDs only	**0E+00**	**4E-02**	**6E-07**
		Based on Detects only	**#VALUE!**	**7E-03**	**7E-07**
		Site-related only	**0E+00**	**1E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0174H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	NA	NA	1.16E-02	3.87E-03	1.0E-06	kidney	---	---	1E-08	4E-09	**2E-08**
TRICHLOROETHENE	79-01-6	9.50E-02	NA		7.75E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0302H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	1.65E-01	N	---	3.77E-02	2.00E+00	---	**2E-02**	1.35E-02	3.00E-05		**4E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	2.70E-01	N	---	6.16E-02	3.00E+01	---	**2E-03**	2.20E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	9.70E-02	Y	---	2.21E-02	7.00E+00	---	**3E-03**	7.91E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	5.40E-01	Y	---	1.23E-01	3.00E+01	---	**4E-03**	4.40E-02	7.80E-06		**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.20E-01	Y	---	7.31E-02	1.00E+02	---	**7E-04**	2.61E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	8.20E-02	Y	---	1.87E-02	9.77E+01	---	**2E-04**	6.69E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	6.40E-01	Y	---	1.46E-01	1.00E+03	---	**1E-04**	5.22E-02	2.50E-06		**1E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	2.90E+00	Y	---	6.62E-01	1.00E+02	---	**7E-03**	2.36E-01	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	3.70E-01	Y	---	8.45E-02	4.00E+01	---	**2E-03**	3.02E-02	2.60E-07		**8E-09**
TRICHLOROETHENE	79-01-6	8.00E-02	N	---	1.83E-02	2.00E+00	---	**9E-03**	6.52E-03	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0302H**	**Total Inhalation**	---	**5E-02**	**2E-06**
		Based on NDs only	**0E+00**	**3E-02**	**5E-07**
		Based on Detects only	**#VALUE!**	**2E-02**	**1E-06**
		Site-related only	**0E+00**	**1E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0302H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	8.00E-02	NA	NA	9.78E-03	3.26E-03	1.0E-06	kidney	---	---	1E-08	3E-09	**1E-08**
TRICHLOROETHENE	79-01-6	8.00E-02	NA		6.52E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0334H**

Pathway:
Inhalation of Outdoor Air

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	2.22E+00	N	---	5.06E-01	2.00E+00	---	**3E-01**	1.81E-01	3.00E-05	**5E-06**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	3.61E-01	N	---	8.23E-02	3.00E+01	---	**3E-03**	2.94E-02	5.00E-06	**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	1.03E-01	Y	---	2.35E-02	7.00E+00	---	**3E-03**	8.40E-03	2.60E-05	**2E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	7.06E-01	Y	---	1.61E-01	3.00E+01	---	**5E-03**	5.76E-02	7.80E-06	**4E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	5.52E-01	Y	---	1.26E-01	1.00E+02	---	**1E-03**	4.50E-02	6.00E-06	**3E-07**
CHLOROFORM	67-66-3	4.87E-02	N	---	1.11E-02	9.77E+01	---	**1E-04**	3.97E-03	2.30E-05	**9E-08**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	9.84E-01	Y	---	2.25E-01	1.00E+03	---	**2E-04**	8.02E-02	2.50E-06	**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	3.67E+00	Y	---	8.38E-01	1.00E+02	---	**8E-03**	2.99E-01	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	3.74E-01	Y	---	8.54E-02	4.00E+01	---	**2E-03**	3.05E-02	2.60E-07	**8E-09**
TRICHLOROETHENE	79-01-6	1.42E-01	Y	---	3.24E-02	2.00E+00	---	**2E-02**	1.16E-02	4.10E-06	M **6E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0334H**	**Total Inhalation**	---	**3E-01**	**7E-06**
		Based on NDs only	**0E+00**	**3E-01**	**6E-06**
		Based on Detects only	**#VALUE!**	**4E-02**	**1E-06**
		Site-related only	**0E+00**	**2E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0334H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	1.42E-01	NA	NA	1.74E-02	5.79E-03	1.0E-06	kidney	---	---	2E-08	6E-09	**2E-08**
TRICHLOROETHENE	79-01-6	1.42E-01	NA		1.16E-02		3.1E-06	NHL+liver	---		4E-08		**4E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**365S**

Pathway:
Inhalation of Outdoor Air

		RME child	RME adult			RME lifetime		
	TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02		

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	1.95E-01	N	---	4.45E-02	2.00E+00	---	**2E-02**	1.59E-02	3.00E-05		**5E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	3.15E-01	N	---	7.19E-02	3.00E+01	---	**2E-03**	2.57E-02	5.00E-06		**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	7.20E-02	Y	---	1.64E-02	7.00E+00	---	**2E-03**	5.87E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	4.60E-01	Y	---	1.05E-01	3.00E+01	---	**4E-03**	3.75E-02	7.80E-06		**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.80E-01	Y	---	8.68E-02	1.00E+02	---	**9E-04**	3.10E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	9.00E-02	Y	---	2.05E-02	9.77E+01	---	**2E-04**	7.34E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	3.90E-01	Y	---	8.90E-02	1.00E+03	---	**9E-05**	3.18E-02	2.50E-06		**8E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.90E+00	Y	---	4.34E-01	1.00E+02	---	**4E-03**	1.55E-01	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	2.10E-01	Y	---	4.79E-02	4.00E+01	---	**1E-03**	1.71E-02	2.60E-07		**4E-09**
TRICHLOROETHENE	79-01-6	9.50E-02	N	---	2.17E-02	2.00E+00	---	**1E-02**	7.75E-03	4.10E-06	M	**4E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**365S**	**Total Inhalation**	---	**5E-02**	**2E-06**
		Based on NDs only	**0E+00**	**4E-02**	**6E-07**
		Based on Detects only	**#VALUE!**	**1E-02**	**9E-07**
		Site-related only	**0E+00**	**1E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**365S**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	9.50E-02	NA	NA	1.16E-02	3.87E-03	1.0E-06	kidney	---	---	1E-08	4E-09	**2E-08**
TRICHLOROETHENE	79-01-6	9.50E-02	NA		7.75E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**0381H**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	1.65E-01	N	---	3.77E-02	2.00E+00	---	**2E-02**	1.35E-02	3.00E-05		**4E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	1.50E-01	Y	---	3.42E-02	3.00E+01	---	**1E-03**	1.22E-02	5.00E-06		**6E-08**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	7.70E-02	Y	---	1.76E-02	7.00E+00	---	**3E-03**	6.28E-03	2.60E-05		**2E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	4.30E-01	Y	---	9.82E-02	3.00E+01	---	**3E-03**	3.51E-02	7.80E-06		**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.70E-01	Y	---	8.45E-02	1.00E+02	---	**8E-04**	3.02E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	9.50E-02	Y	---	2.17E-02	9.77E+01	---	**2E-04**	7.75E-03	2.30E-05		**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-		---
ETHYLBENZENE	100-41-4	2.80E-01	Y	---	6.39E-02	1.00E+03	---	**6E-05**	2.28E-02	2.50E-06		**6E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	1.20E+00	Y	---	2.74E-01	1.00E+02	---	**3E-03**	9.78E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	1.90E-01	Y	---	4.34E-02	4.00E+01	---	**1E-03**	1.55E-02	2.60E-07		**4E-09**
TRICHLOROETHENE	79-01-6	8.00E-02	N	---	1.83E-02	2.00E+00	---	**9E-03**	6.52E-03	4.10E-06	M	**3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**0381H**	**Total Inhalation**	---	**4E-02**	**1E-06**
		Based on NDs only	**0E+00**	**3E-02**	**4E-07**
		Based on Detects only	**#VALUE!**	**1E-02**	**9E-07**
		Site-related only	**0E+00**	**1E-02**	**1E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**0381H**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	8.00E-02	NA	NA	9.78E-03	3.26E-03	1.0E-06	kidney	---	---	1E-08	3E-09	**1E-08**
TRICHLOROETHENE	79-01-6	8.00E-02	NA		6.52E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**B32**

Pathway:
Inhalation of Outdoor Air

				RME child	RME adult			RME lifetime			
			TWFnc (unitless)	#N/A	2.28E-01		TWFc (unitless)	8.15E-02			
COPC	**CASRN**	**EPCmax Outdoor Air (ug/m^3)**	**Analyte Detected?**	**Non-Cancer Risk Calculations**					**Cancer Risk Calculations**		
				Exp. Conc. (ug/m^3)		**Inhalation RfC (ug/m^3)**	**Hazard Quotient**		**Exp. Conc. (ug/m^3)**	**IUR (ug/m^3)$^{-1}$**	**Cancer Risk**
				Child	**Adult**		**Child**	**Adult**			
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05	---
1,3-BUTADIENE	106-99-0	1.65E-01	N	---	3.77E-02	2.00E+00	---	**2E-02**	1.35E-02	3.00E-05	**4E-07**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05	---
1,4-DIOXANE	123-91-1	2.70E-01	N	---	6.16E-02	3.00E+01	---	**2E-03**	2.20E-02	5.00E-06	**1E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05	---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-	---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04	---
1,2-DICHLOROETHANE	107-06-2	7.40E-02	Y	---	1.69E-02	7.00E+00	---	**2E-03**	6.03E-03	2.60E-05	**2E-07**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06	---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-	---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05	---
BENZENE	71-43-2	4.90E-01	Y	---	1.12E-01	3.00E+01	---	**4E-03**	4.00E-02	7.80E-06	**3E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05	---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-	---
CARBON TETRACHLORIDE	56-23-5	6.90E-01	Y	---	1.58E-01	1.00E+02	---	**2E-03**	5.63E-02	6.00E-06	**3E-07**
CHLOROFORM	67-66-3	9.00E-02	Y	---	2.05E-02	9.77E+01	---	**2E-04**	7.34E-03	2.30E-05	**2E-07**
ETHYL ACETATE	141-78-6	NA		---	---	7.00E+01	---	---	---	-	---
ETHYLBENZENE	100-41-4	7.80E-01	Y	---	1.78E-01	1.00E+03	---	**2E-04**	6.36E-02	2.50E-06	**2E-07**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05	---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-	---
M,P-XYLENE	108-38-3	3.60E+00	Y	---	8.22E-01	1.00E+02	---	**8E-03**	2.94E-01	-	---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M ---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05	---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-	---
TETRACHLOROETHENE	127-18-4	4.30E-01	Y	---	9.82E-02	4.00E+01	---	**2E-03**	3.51E-02	2.60E-07	**9E-09**
TRICHLOROETHENE	79-01-6	8.00E-02	N	---	1.83E-02	2.00E+00	---	**9E-03**	6.52E-03	4.10E-06	M **3E-08**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-	---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M ---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**B32**	**Total Inhalation**	---	**5E-02**	**2E-06**
		Based on NDs only	**0E+00**	**3E-02**	**5E-07**
		Based on Detects only	**#VALUE!**	**2E-02**	**1E-06**
		Site-related only	**0E+00**	**1E-02**	**2E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**B32**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	8.00E-02	NA	NA	9.78E-03	3.26E-03	1.0E-06	kidney	---	---	1E-08	3E-09	**1E-08**
TRICHLOROETHENE	79-01-6	8.00E-02	NA		6.52E-03		3.1E-06	NHL+liver	---		2E-08		**2E-08**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**building 6**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	5.00E-01	N	---	1.14E-01	2.00E+00	---	**6E-02**	4.08E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	7.40E-01	Y	---	1.69E-01	3.00E+01	---	**6E-03**	6.03E-02	5.00E-06		**3E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	5.00E-01	N	---	1.14E-01	7.00E+00	---	**2E-02**	4.08E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	3.60E-01	Y	---	8.22E-02	3.00E+01	---	**3E-03**	2.94E-02	7.80E-06		**2E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	4.90E-01	Y	---	1.12E-01	1.00E+02	---	**1E-03**	4.00E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	2.40E-01	Y	---	5.48E-02	9.77E+01	---	**6E-04**	1.96E-02	2.30E-05		**5E-07**
ETHYL ACETATE	141-78-6	8.90E+00	Y	---	2.03E+00	7.00E+01	---	**3E-02**	7.26E-01	-		---
ETHYLBENZENE	100-41-4	1.80E-01	Y	---	4.11E-02	1.00E+03	---	**4E-05**	1.47E-02	2.50E-06		**4E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	7.10E-01	Y	---	1.62E-01	1.00E+02	---	**2E-03**	5.79E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	8.31E+00	Y	---	1.90E+00	4.00E+01	---	**5E-02**	6.78E-01	2.60E-07		**2E-07**
TRICHLOROETHENE	79-01-6	5.00E-01	N	---	1.14E-01	2.00E+00	---	**6E-02**	4.08E-02	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**building 6**	**Total Inhalation**	---	**2E-01**	**4E-06**
		Based on NDs only	**0E+00**	**1E-01**	**2E-06**
		Based on Detects only	**#VALUE!**	**9E-02**	**1E-06**
		Site-related only	**0E+00**	**1E-01**	**7E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**building 6**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR $(ug/m^3)^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	5.00E-01	NA	NA	6.12E-02	2.04E-02	1.0E-06	kidney	---	---	6E-08	2E-08	**8E-08**
TRICHLOROETHENE	79-01-6	5.00E-01	NA		4.08E-02		3.1E-06	NHL+liver	---		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND
Based on RME Exposure Parameters

Receptor:	**Outdoor Worker**
Exposure Area:	**building 7**

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult		RME lifetime
TWFnc (unitless)	#N/A	2.28E-01	TWFc (unitless)	8.15E-02

COPC	CASRN	EPCmax Outdoor Air (ug/m^3)	Analyte Detected?	Non-Cancer Risk Calculations					Cancer Risk Calculations			
				Exp. Conc. (ug/m^3)		Inhalation RfC (ug/m^3)	Hazard Quotient		Exp. Conc. (ug/m^3)	IUR (ug/m^3)$^{-1}$		Cancer Risk
				Child	Adult		Child	Adult				
1,1,2,2-TETRACHLOROETHANE	79-34-5	Not a COPC		---	---	NA	---	---	---	5.80E-05		---
1,3-BUTADIENE	106-99-0	4.40E-01	N	---	1.00E-01	2.00E+00	---	**5E-02**	3.59E-02	3.00E-05		**1E-06**
BENZYL CHLORIDE	100-44-7	Not a COPC		---	---	1.00E+00	---	---	---	4.90E-05		---
1,4-DIOXANE	123-91-1	4.50E-01	N	---	1.03E-01	3.00E+01	---	**3E-03**	3.67E-02	5.00E-06		**2E-07**
1,1,2-TRICHLOROETHANE	79-00-5	Not a COPC		---	---	2.00E-01	---	---	---	1.60E-05		---
1,2,4-TRICHLOROBENZENE	120-82-1	Not a COPC		---	---	2.00E+00	---	---	---	-		---
1,2,4-TRIMETHYLBENZENE	95-63-6	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,2-DIBROMOETHANE	106-93-4	Not a COPC		---	---	9.00E+00	---	---	---	6.00E-04		---
1,2-DICHLOROETHANE	107-06-2	4.50E-01	N	---	1.03E-01	7.00E+00	---	**1E-02**	3.67E-02	2.60E-05		**1E-06**
1,2-DICHLOROPROPANE	78-87-5	Not a COPC		---	---	4.00E+00	---	---	---	3.70E-06		---
1,3,5-Trimethylbenzene	108-67-8	Not a COPC		---	---	6.00E+01	---	---	---	-		---
1,4-DICHLOROBENZENE	106-46-7	Not a COPC		---	---	8.00E+02	---	---	---	1.10E-05		---
BENZENE	71-43-2	2.00E-01	Y	---	4.57E-02	3.00E+01	---	**2E-03**	1.63E-02	7.80E-06		**1E-07**
BROMODICHLOROMETHANE	75-27-4	Not a COPC		---	---	NA	---	---	---	3.70E-05		---
BROMOMETHANE	74-83-9	Not a COPC		---	---	5.00E+00	---	---	---	-		---
CARBON TETRACHLORIDE	56-23-5	3.70E-01	Y	---	8.45E-02	1.00E+02	---	**8E-04**	3.02E-02	6.00E-06		**2E-07**
CHLOROFORM	67-66-3	4.60E-01	N	---	1.05E-01	9.77E+01	---	**1E-03**	3.75E-02	2.30E-05		**9E-07**
ETHYL ACETATE	141-78-6	1.00E+00	Y	---	2.28E-01	7.00E+01	---	**3E-03**	8.15E-02	-		---
ETHYLBENZENE	100-41-4	4.40E-01	N	---	1.00E-01	1.00E+03	---	**1E-04**	3.59E-02	2.50E-06		**9E-08**
HEXACHLORO-1,3-BUTADIENE	87-68-3	Not a COPC		---	---	NA	---	---	---	2.20E-05		---
ISOPROPYL ALCOHOL	67-63-0	Not a COPC		---	---	2.00E+02	---	---	---	-		---
M,P-XYLENE	108-38-3	2.70E-01	Y	---	6.16E-02	1.00E+02	---	**6E-04**	2.20E-02	-		---
METHYLENE CHLORIDE	75-09-2	Not a COPC		---	---	6.00E+02	---	---	---	1.00E-08	M	---
NAPHTHALENE	91-20-3	Not a COPC		---	---	3.00E+00	---	---	---	3.40E-05		---
O-XYLENE	95-47-6	Not a COPC		---	---	1.00E+02	---	---	---	-		---
TETRACHLOROETHENE	127-18-4	4.50E-01	N	---	1.03E-01	4.00E+01	---	**3E-03**	3.67E-02	2.60E-07		**1E-08**
TRICHLOROETHENE	79-01-6	4.50E-01	N	---	1.03E-01	2.00E+00	---	**5E-02**	3.67E-02	4.10E-06	M	**2E-07**
VINYL ACETATE	108-05-4	Not a COPC		---	---	2.00E+02	---	---	---	-		---
VINYL CHLORIDE	75-01-4	Not a COPC		---	---	8.00E+01	---	---	---	4.40E-06	M	---

			HI_{child}	HI_{adult}	$Risk_{lifetime}$
Outdoor Worker	**building 7**	**Total Inhalation**	---	**1E-01**	**4E-06**
		Based on NDs only	**0E+00**	**1E-01**	**3E-06**
		Based on Detects only	**#VALUE!**	**6E-03**	**3E-07**
		Site-related only	**0E+00**	**6E-02**	**4E-07**

ATTACHMENT H.8. DETAILED HUMAN HEALTH RISK CALCULATIONS FOR OUTDOOR AIR AT THE VA PCE PLUME SUPERFUND - MUTAGENIC CHEMICALS

Receptor:	**Outdoor Worker**
Exposure Area:	**building 7**

		ADAF	ED ratio
Age Group Interval	0-2 yrs	10	0.33
	2-6 yrs	3	0.67
	6-16 yrs	3	0.5
	16+ yrs	1	0.5

Pathway:
Inhalation of Outdoor Air

	RME child	RME adult
TWFc (unitless)	#N/A	8.15E-02

COPC	CASRN	EPC Air (ug/m^3)	Exp. Conc. (ug/m^3)				IUR (ug/m^3)$^{-1}$		Age Group Cancer Risk				Total Cancer Risk
			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs			0-2 yrs	2-6 yrs	6-16 yrs	16+ yrs	
METHYLENE CHLORIDE	75-09-2	Not a COPC	---	---	---	---	1.0E-08		---	---	---	---	**---**
TRICHLOROETHENE	79-01-6	4.50E-01	NA	NA	5.50E-02	1.83E-02	1.0E-06	kidney	---	---	6E-08	2E-08	**7E-08**
TRICHLOROETHENE	79-01-6	4.50E-01	NA		3.67E-02		3.1E-06	NHL+liver	---		1E-07		**1E-07**
VINYL CHLORIDE	75-01-4	Not a COPC	---	---	---	---	4.4E-06		---	---	---	---	**---**

Attachment H.9

Risk Summary Tables Based on CTE Exposure Parameters

CDM Smith

Attachment H9.1. CTE and RME Risk Summary for Hypothetical Future Residential Exposures to Groundwater
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Well	Risk Grouping [a]	Reasonable Maximum Exposure (RME)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)	Central Tendancy Exposure (CTE)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	HI_{adult}	$Risk_{lifetime}$			HI_{child}	HI_{adult}	$Risk_{lifetime}$		
Residential	**MW-01D**	Based on Detects only	3E-01	2E-01	4E-06		Ingestion: BIS(2-ETHYLHEXYL)PHTHALATE	7E-02	5E-02	3E-07		
		Site-related only	4E-01	3E-01	1E-05		none [c]	7E-02	5E-02	8E-07		
Residential	**MW-03RB**	Based on Detects only	6E+00	5E+00	5E-05	Ingestion, Dermal, and Inhalation: **PCE**	Ingestion: CHLOROFORM; **PCE; TCE** Dermal: **PCE** Inhalation: BROMODICHLOROMETHANE; CHLOROFORM; **PCE; TCE**	1E+00	1E+00	2E-06		none
		Site-related only	6E+00	5E+00	3E-05			1E+00	1E+00	2E-06		
Residential	**MW-03RC**	Based on Detects only	2E-01	1E-01	9E-06		Inhalation: CHLOROFORM	4E-02	3E-02	2E-07		
		Site-related only	4E-01	3E-01	2E-06		none	6E-02	5E-02	1E-07		
Residential	**MW-03RD**	Based on Detects only	8E-03	6E-03	1E-06			1E-03	9E-04	4E-08		
		Site-related only	2E-01	2E-01	2E-06		none	3E-02	2E-02	1E-07		
Residential	**MW-08C**	Based on Detects only	6E-03	5E-03	1E-06			1E-03	7E-04	3E-08		
		Site-related only	2E-01	2E-01	2E-06		none	3E-02	2E-02	1E-07		
Residential	**MW-13L**	Based on Detects only	1E+00	1E+00	2E-05		Inhalation: CHLOROFORM; **PCE**	3E-01	2E-01	6E-07		
		Site-related only	1E+00	1E+00	6E-06			3E-01	2E-01	4E-07		
Residential	**MW-34C**	Based on Detects only	All ND	All ND	All ND			All ND	All ND	All ND		
		Site-related only	2E-01	2E-01	1E-06		none	3E-02	2E-02	1E-07		
Residential	**MW-34D**	Based on Detects only	All ND	All ND	All ND			All ND	All ND	All ND		
		Site-related only	2E-01	2E-01	2E-06		none	3E-02	2E-02	1E-07		

See Attachment H.5 for detailed risk estimates for each exposure pathway and COPC.

Cancer risk is within the USEPA acceptable risk range between 1E-06 and 1E-04

Non-cancer HI is greater than 1 or cancer risk is greater than 1E-04

Notes:

[a] Risk is presented based on detects only (i.e., includes only the detected COPCs) and for site-related COPCs only. The site-related COPCs include PCE, TCE, cis-1,2-DCE, vinyl chloride, and 1,4-dioxane. Risk for site-related COPCs includes both detects and non-detects.

[b] Chemicals are identified as drivers if the individual chemical-specific HQ is greater than 1 or risk is greater than 1E-06. The list of risk drivers is limited to only those chemicals that were detected in groundwater. Site-related risk drivers are shown in **bold**.

[c] 1,4-dioxane was not detected in groundwater, but the achieved detection limits were not adequate relative to a cancer risk threshold of 1E-06.

All ND = all COPCs were non-detect in all samples
cis-1,2-DCE = cis-1,2-Dichloroethene
COPC = chemicals of potential concern
HI = hazard index
HQ = hazard quotient
none = no individual chemicals had an non-cancer HQ greater than 1 or cancer risk greater than 1E-06
PCE = Tetrachloroethene
TCE = Trichloroethene

Attachment H.9.2. CTE and RME Risk Summary for Residential Exposures to Indoor Air
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)	Central Tendancy Exposure (CTE)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	HI_{adult}	$Risk_{lifetime}$			HI_{child}	HI_{adult}	$Risk_{lifetime}$		
Residential Properties												
Residential	**0001-H**	Based on Detects only	8E-01	8E-01	3E-05		1,2-DICHLOROETHANE; BENZENE; CARBON TETRACHLORIDE; CHLOROFORM; ETHYLBENZENE	5E-01	4E-01	6E-06		1,2-DICHLOROETHANE; CHLOROFORM;
		Site-related only	2E-01	2E-01	2E-06			2E-01	1E-01	4E-07		
Residential	**0002-H**	Based on Detects only	5E-01	5E-01	1E-05		BENZENE; CHLOROFORM	3E-01	3E-01	3E-06		CHLOROFORM;
		Site-related only	2E-01	2E-01	1E-06			1E-01	1E-01	2E-07		
Residential	**0003-H**	Based on Detects only	4E+00	4E+00	5E-04	none	1,1,2,2-TETRACHLOROETHANE; 1,3-BUTADIENE; 1,2-DICHLOROETHANE; BENZENE; CHLOROFORM; ETHYLBENZENE; **PCE**	2E+00	2E+00	1E-04	none	1,1,2,2-TETRACHLOROETHANE; BENZENE; CHLOROFORM; ETHYLBENZENE
		Site-related only	4E-01	4E-01	3E-06			3E-01	2E-01	6E-07		
Residential	**0004-H**	Based on Detects only	6E-02	6E-02	9E-06		BENZENE; CHLOROFORM	4E-02	3E-02	2E-06		none
		Site-related only	1E-01	1E-01	1E-06			8E-02	7E-02	2E-07		
Residential	**0008-H**	Based on Detects only	3E+00	3E+00	1E-04	BENZENE; M,P-XYLENE	BENZENE; ETHYLBENZENE	2E+00	2E+00	2E-05	none	BENZENE; ETHYLBENZENE
		Site-related only	3E-01	3E-01	2E-06			2E-01	1E-01	4E-07		
Residential	**0011-H**	Based on Detects only	7E-01	7E-01	1E-05		BENZENE; CHLOROFORM; **PCE**	4E-01	4E-01	3E-06		none
		Site-related only	5E-01	5E-01	2E-06			3E-01	3E-01	5E-07		
Residential	**0012-H**	Based on Detects only	2E-01	2E-01	2E-05		BENZENE; CHLOROFORM	1E-01	1E-01	3E-06		CHLOROFORM
		Site-related only	2E-01	2E-01	1E-06			1E-01	1E-01	2E-07		
Residential	**0013-H**	Based on Detects only	2E-01	2E-01	7E-06		BENZENE; CHLOROFORM	1E-01	1E-01	1E-06		
		Site-related only	1E-01	1E-01	1E-06			8E-02	7E-02	2E-07		
Residential	**0017-H**	Based on Detects only	6E-01	6E-01	2E-05		BENZENE; CHLOROFORM	4E-01	3E-01	3E-06		CHLOROFORM
		Site-related only	4E-01	4E-01	2E-06			3E-01	2E-01	4E-07		
Residential	**0018-H**	Based on Detects only	8E+00	8E+00	2E-04	1,2,4-TRICHLOROBENZENE; BENZYL CHLORIDE; NAPHTHALENE	1,1,2,2-TETRACHLOROETHANE; 1,3-BUTADIENE; 1,2-DIBROMOETHANE; 1,2-DICHLOROETHANE; 1,4-DICHLOROBENZENE; BENZENE; BENZYL CHLORIDE; BROMODICHLOROMETHANE; CHLOROFORM; ETHYLBENZENE; HEXACHLORO-1,3-BUTADIENE; NAPHTHALENE; **TCE**	5E+00	4E+00	5E-05	1,2,4-TRICHLOROBENZENE; NAPHTHALENE	1,2-DIBROMOETHANE; 1,2-DICHLOROETHANE; BENZENE; BENZYL CHLORIDE; CHLOROFORM; HEXACHLORO-1,3-BUTADIENE; NAPHTHALENE
		Site-related only	7E-01	7E-01	4E-06			5E-01	4E-01	8E-07		
Residential	**0023-H**	Based on Detects only	1E-01	1E-01	4E-06		BENZENE	7E-02	6E-02	8E-07		
		Site-related only	1E-01	1E-01	9E-07			6E-02	5E-02	2E-07		
Residential	**0025-H**	Based on Detects only	3E-01	3E-01	4E-05		**1,4-DIOXANE**; 1,2-DICHLOROETHANE; 1,4-DICHLOROBENZENE; BENZENE; CHLOROFORM	2E-01	2E-01	7E-06		1,4-DICHLOROBENZENE; CHLOROFORM
		Site-related only	2E-01	2E-01	5E-06			1E-01	1E-01	1E-06		
Residential	**0026-H**	Based on Detects only	5E+00	5E+00	7E-05	1,1,2-TRICHLOROETHANE	1,1,2-TRICHLOROETHANE; 1,2-DICHLOROETHANE; BENZENE; BROMODICHLOROMETHANE; CHLOROFORM; ETHYLBENZENE	3E+00	3E+00	1E-05	1,1,2-TRICHLOROETHANE	1,2-DICHLOROETHANE; BROMODICHLOROMETHANE; CHLOROFORM
		Site-related only	4E-01	4E-01	2E-06			3E-01	2E-01	4E-07		
Residential	**0027-H**	Based on Detects only	5E-01	5E-01	4E-05		1,2-DICHLOROETHANE; 1,4-DICHLOROBENZENE; BENZENE	3E-01	3E-01	9E-06		1,2-DICHLOROETHANE; 1,4-DICHLOROBENZENE
		Site-related only	1E-01	1E-01	1E-06			8E-02	7E-02	2E-07		
Residential	**0029-H**	Based on Detects only	4E-01	4E-01	1E-05		BENZENE; CHLOROFORM	2E-01	2E-01	3E-06		CHLOROFORM
		Site-related only	2E-01	2E-01	1E-06			1E-01	1E-01	3E-07		
Residential	**0030-H**	Based on Detects only	5E-01	5E-01	1E-05		1,2-DICHLOROETHANE; BENZENE	3E-01	3E-01	3E-06		1,2-DICHLOROETHANE
		Site-related only	3E-01	3E-01	2E-06			2E-01	2E-01	4E-07		
Residential	**0036-H**	Based on Detects only	2E-01	2E-01	1E-05		BENZENE; CHLOROFORM	1E-01	1E-01	2E-06		CHLOROFORM
		Site-related only	3E-01	3E-01	2E-06			2E-01	2E-01	4E-07		
Residential	**0037-H**	Based on Detects only	2E+00	2E+00	1E-04	1,2-DICHLOROETHANE	1,1,2,2-TETRACHLOROETHANE; 1,3-BUTADIENE; **1,4-DIOXANE**; 1,2-DICHLOROETHANE; BENZENE; BROMODICHLOROMETHANE; CHLOROFORM; ETHYLBENZENE	1E+00	1E+00	2E-05		1,2-DICHLOROETHANE; BENZENE; CHLOROFORM
		Site-related only	3E-01	3E-01	4E-06			2E-01	2E-01	8E-07		
Residential	**0038-H**	Based on Detects only	5E-02	5E-02	1E-05		CHLOROFORM	3E-02	3E-02	3E-06		CHLOROFORM
		Site-related only	1E-01	1E-01	1E-06			8E-02	7E-02	2E-07		
Residential	**0040-H [c]**	Based on Detects only	1E+01	1E+01	1E-04	METHYLENE CHLORIDE; **PCE; TCE**	1,3-BUTADIENE; BENZENE; CHLOROFORM; ETHYLBENZENE; METHYLENE CHLORIDE; **PCE; TCE**	7E+00	6E+00	2E-05	**PCE; TCE**	1,3-BUTADIENE; CHLOROFORM; **PCE; TCE**
		Site-related only	1E+01	1E+01	4E-05			6E+00	5E+00	8E-06		
Residential	**0041-H**	Based on Detects only	3E-01	3E-01	1E-05		1,2-DICHLOROETHANE; CHLOROFORM	2E-01	2E-01	3E-06		none
		Site-related only	2E-01	2E-01	1E-06			1E-01	1E-01	2E-07		
Residential	**0047-H**	Based on Detects only	2E-01	2E-01	8E-07			1E-01	1E-01	2E-07		
		Site-related only	3E-01	3E-01	1E-06			2E-01	2E-01	3E-07		

Attachment H.9.2. CTE and RME Risk Summary for Residential Exposures to Indoor Air
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)	Central Tendancy Exposure (CTE)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	HI_{adult}	$Risk_{lifetime}$			HI_{child}	HI_{adult}	$Risk_{lifetime}$		
Residential	**0050-H**	Based on Detects only	All ND	All ND	All ND			All ND	All ND	All ND		
		Site-related only	1E-01	1E-01	6E-07			8E-02	7E-02	1E-07		
Residential	**0051-H [d]**	Based on Detects only	1E+01	1E+01	7E-05	ISOPROPYL ALCOHOL; **PCE**	BENZENE; BROMODICHLOROMETHANE; CHLOROFORM; **PCE**	8E+00	7E+00	1E-05	ISOPROPYL ALCOHOL; **PCE**	CHLOROFORM; **PCE**
		Site-related only	1E+01	1E+01	4E-05			6E+00	5E+00	7E-06		
Residential	**0052-H**	Based on Detects only	5E-02	5E-02	2E-07			3E-02	2E-02	3E-08		
		Site-related only	2E-01	2E-01	7E-07			1E-01	9E-02	1E-07		
Residential	**0053-H**	Based on Detects only	1E+00	1E+00	2E-05		1,3-BUTADIENE; BENZENE; CHLOROFORM; ETHYLBENZENE; **PCE**	7E-01	6E-01	4E-06		none
		Site-related only	8E-01	8E-01	4E-06			5E-01	4E-01	8E-07		
Residential	**0054-H [e]**	Based on Detects only	5E+00	5E+00	2E-05	**TCE**	**PCE; TCE**	3E+00	3E+00	4E-06	**TCE**	**TCE**
		Site-related only	5E+00	5E+00	2E-05			3E+00	3E+00	4E-06		
Residential	**0055-H**	Based on Detects only	4E-02	4E-02	1E-07			2E-02	2E-02	3E-08		
		Site-related only	2E-01	2E-01	7E-07			1E-01	8E-02	1E-07		
Residential	**0056-H**	Based on Detects only	2E-01	2E-01	6E-07			1E-01	9E-02	1E-07		
		Site-related only	3E-01	3E-01	1E-06			2E-01	2E-01	2E-07		
Residential	**0057-H**	Based on Detects only	All ND	All ND	All ND			All ND	All ND	All ND		
		Site-related only	1E-01	1E-01	6E-07			8E-02	7E-02	1E-07		
Residential	**0058-H**	Based on Detects only	All ND	All ND	All ND			All ND	All ND	All ND		
		Site-related only	1E-01	1E-01	6E-07			8E-02	7E-02	1E-07		
Residential	**0059-H [f]**	Based on Detects only	1E+01	1E+01	1E-04	1,2,4-TRICHLOROBENZENE; **PCE; TCE**	1,3-BUTADIENE; **1,4-DIOXANE**; BENZENE; BROMODICHLOROMETHANE; CARBON TETRACHLORIDE; CHLOROFORM; HEXACHLORO-1,3-BUTADIENE; **PCE; TCE**	9E+00	8E+00	2E-05	1,2,4-TRICHLOROBENZENE; **PCE; TCE**	**1,4-DIOXANE**; CHLOROFORM; HEXACHLORO-1,3-BUTADIENE; **PCE; TCE**
		Site-related only	1E+01	1E+01	5E-05			7E+00	6E+00	1E-05		
Residential	**0060-H**	Based on Detects only	All ND	All ND	All ND			All ND	All ND	All ND		
		Site-related only	1E-01	1E-01	6E-07			8E-02	7E-02	1E-07		
Residential	**0061-H**	Based on Detects only	All ND	All ND	All ND			All ND	All ND	All ND		
		Site-related only	1E-01	1E-01	6E-07			8E-02	7E-02	1E-07		
Residential	**0062-H**	Based on Detects only	2E-01	2E-01	8E-06		1,2-DICHLOROETHANE; BENZENE; CHLOROFORM	1E-01	9E-02	2E-06		none
		Site-related only	1E-01	1E-01	7E-07			8E-02	7E-02	1E-07		
Residential	**0063-H**	Based on Detects only	1E-01	1E-01	4E-07			6E-02	5E-02	7E-08		
		Site-related only	2E-01	2E-01	9E-07			1E-01	1E-01	2E-07		
Residential	**0064-H**	Based on Detects only	6E-01	6E-01	1E-05		BENZENE; CHLOROFORM; ETHYLBENZENE	4E-01	3E-01	3E-06		none
		Site-related only	4E-01	4E-01	3E-06			3E-01	2E-01	5E-07		
Residential	**0065-H**	Based on Detects only	2E-01	2E-01	1E-05		BENZENE; CHLOROFORM	1E-01	9E-02	2E-06		none
		Site-related only	5E-02	5E-02	7E-07			3E-02	3E-02	1E-07		
Residential	**0066-H**	Based on Detects only	4E-01	4E-01	1E-05		1,2-DICHLOROETHANE; BENZENE; CHLOROFORM	2E-01	2E-01	3E-06		none
		Site-related only	1E-01	1E-01	1E-06			7E-02	6E-02	2E-07		
Residential	**0069-H**	Based on Detects only	4E-01	4E-01	2E-05		1,2-DICHLOROETHANE; BENZENE; CHLOROFORM	2E-01	2E-01	4E-06		1,2-DICHLOROETHANE
		Site-related only	8E-02	8E-02	9E-07			5E-02	4E-02	2E-07		
Residential	**0071-H**	Based on Detects only	5E-01	5E-01	2E-05		1,2-DICHLOROETHANE; BENZENE; CHLOROFORM	3E-01	3E-01	5E-06		CHLOROFORM
		Site-related only	3E-02	3E-02	3E-07			2E-02	2E-02	5E-08		
Residential	**0072-H**	Based on Detects only	2E-01	2E-01	6E-06		CHLOROFORM	1E-01	1E-01	1E-06		
		Site-related only	2E-02	2E-02	3E-07			1E-02	1E-02	5E-08		
Residential	**0076-H**	Based on Detects only	4E-01	4E-01	2E-05		BENZENE; CHLOROFORM; ETHYLBENZENE	2E-01	2E-01	4E-06		BENZENE
		Site-related only	3E-02	3E-02	6E-07			2E-02	2E-02	1E-07		
Residential	**0091-H**	Based on Detects only	1E+00	1E+00	5E-05		1,2-DICHLOROETHANE; BENZENE; BROMODICHLOROMETHANE; CARBON TETRACHLORIDE; CHLOROFORM; **PCE**	8E-01	7E-01	1E-05		BROMODICHLOROMETHANE; CHLOROFORM
		Site-related only	6E-01	6E-01	3E-06			4E-01	3E-01	6E-07		
Residential	**0098-H**	Based on Detects only	8E-01	8E-01	3E-05		1,4-DICHLOROBENZENE; BENZENE; CHLOROFORM; ETHYLBENZENE; TCE	5E-01	4E-01	6E-06		BENZENE
		Site-related only	4E-01	4E-01	2E-06			3E-01	2E-01	4E-07		
Residential	**0102-H**	Based on Detects only	1E+00	1E+00	4E-05		1,2-DICHLOROETHANE; BENZENE; BROMODICHLOROMETHANE; CARBON TETRACHLORIDE; CHLOROFORM; ETHYLBENZENE	8E-01	6E-01	7E-06		1,2-DICHLOROETHANE; CHLOROFORM
		Site-related only	3E-02	3E-02	8E-07			2E-02	2E-02	2E-07		
Residential	**0118-H**	Based on Detects only	1E+00	1E+00	3E-05		BENZENE; CHLOROFORM; METHYLENE CHLORIDE	8E-01	7E-01	5E-06		CHLOROFORM
		Site-related only	1E-01	1E-01	9E-07			9E-02	7E-02	2E-07		

Attachment H.9.2. CTE and RME Risk Summary for Residential Exposures to Indoor Air
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)	Central Tendancy Exposure (CTE)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	HI_{adult}	$Risk_{lifetime}$			HI_{child}	HI_{adult}	$Risk_{lifetime}$		
Residential	**0121-H**	Based on Detects only	6E-01	6E-01	2E-05		BENZENE; BROMODICHLOROMETHANE; CHLOROFORM; NAPHTHALENE	4E-01	3E-01	4E-06		CHLOROFORM
		Site-related only	1E-01	1E-01	1E-06			8E-02	7E-02	2E-07		
Residential	**0122-H**	Based on Detects only	5E-01	5E-01	1E-05		1,3-BUTADIENE; BENZENE; CHLOROFORM	3E-01	3E-01	3E-06		none
		Site-related only	1E-01	1E-01	8E-07			8E-02	7E-02	2E-07		
Residential	**0133-H**	Based on Detects only	4E-01	4E-01	6E-05		1,2-DICHLOROETHANE; BENZENE; BROMODICHLOROMETHANE; CHLOROFORM	2E-01	2E-01	1E-05		BROMODICHLOROMETHANE; CHLOROFORM
		Site-related only	3E-02	3E-02	4E-07			2E-02	1E-02	7E-08		
Residential	**0135-H**	Based on Detects only	1E+00	1E+00	3E-05		BENZENE; CHLOROFORM; ETHYLBENZENE; NAPHTHALENE	6E-01	5E-01	6E-06		CHLOROFORM; ETHYLBENZENE
		Site-related only	4E-02	4E-02	4E-07			3E-02	2E-02	8E-08		
Residential	**0137-H**	Based on Detects only	5E-01	5E-01	3E-05		BENZENE; CHLOROFORM; ETHYLBENZENE	3E-01	2E-01	5E-06		BENZENE; CHLOROFORM
		Site-related only	1E-01	1E-01	8E-07			6E-02	5E-02	1E-07		
Residential	**0139-H**	Based on Detects only	3E+00	3E+00	3E-04	ISOPROPYL ALCOHOL	1,3-BUTADIENE; 1,2-DICHLOROETHANE; 1,4-DICHLOROBENZENE; BENZENE; CHLOROFORM	2E+00	2E+00	5E-05	ISOPROPYL ALCOHOL	1,3-BUTADIENE; 1,4-DICHLOROBENZENE; CHLOROFORM
		Site-related only	3E-02	3E-02	5E-07			2E-02	2E-02	1E-07		
Residential	**0145-H**	Based on Detects only	3E-01	3E-01	2E-05		1,4-DICHLOROBENZENE; CARBON TETRACHLORIDE; CHLOROFORM	2E-01	1E-01	4E-06		1,4-DICHLOROBENZENE
		Site-related only	1E-01	1E-01	7E-07			9E-02	7E-02	1E-07		
Residential	**0146-H**	Based on Detects only	8E-01	8E-01	2E-05		BENZENE; CHLOROFORM	5E-01	4E-01	3E-06		CHLOROFORM
		Site-related only	3E-01	3E-01	1E-06			2E-01	1E-01	3E-07		
Residential	**0148-H**	Based on Detects only	7E-01	7E-01	2E-05		BENZENE; CHLOROFORM	4E-01	4E-01	4E-06		CHLOROFORM
		Site-related only	8E-02	8E-02	6E-07			5E-02	4E-02	1E-07		
Residential	**0153-H**	Based on Detects only	5E-01	5E-01	1E-05		BENZENE; CHLOROFORM	3E-01	3E-01	3E-06		CHLOROFORM
		Site-related only	5E-02	5E-02	5E-07			3E-02	3E-02	1E-07		
Residential	**0162-H**	Based on Detects only	4E-01	4E-01	2E-05		1,2-DICHLOROETHANE; BENZENE; CHLOROFORM	3E-01	2E-01	5E-06		1,2-DICHLOROETHANE
		Site-related only	3E-02	3E-02	5E-07			2E-02	2E-02	1E-07		
Residential	**0166-H**	Based on Detects only	3E+00	3E+00	2E-05	ISOPROPYL ALCOHOL	BENZENE; CHLOROFORM; **TCE**	2E+00	1E+00	4E-06	ISOPROPYL ALCOHOL	CHLOROFORM
		Site-related only	6E-01	6E-01	3E-06			4E-01	3E-01	6E-07		
Residential	**0172-H**	Based on Detects only	2E-01	2E-01	4E-06		none	1E-01	1E-01	8E-07		
		Site-related only	1E-01	1E-01	6E-07			8E-02	6E-02	1E-07		
Residential	**0173-H**	Based on Detects only	5E-01	5E-01	2E-05		1,2-DICHLOROETHANE; BENZENE; CHLOROFORM	3E-01	3E-01	4E-06		CHLOROFORM
		Site-related only	2E-01	2E-01	1E-06			1E-01	1E-01	2E-07		
Residential	**0174-H**	Based on Detects only	8E-01	8E-01	8E-05		1,2-DICHLOROETHANE; BENZENE; BROMODICHLOROMETHANE; CARBON TETRACHLORIDE; CHLOROFORM; ETHYLBENZENE	5E-01	4E-01	1E-05		1,2-DICHLOROETHANE; BROMODICHLOROMETHANE; CHLOROFORM
		Site-related only	8E-02	8E-02	2E-06			5E-02	4E-02	3E-07		
Residential	**0180-H**	Based on Detects only	9E-02	9E-02	4E-06		none	6E-02	5E-02	7E-07		
		Site-related only	8E-03	8E-03	2E-07			5E-03	4E-03	4E-08		
Residential	**0189-H**	Based on Detects only	1E+00	1E+00	1E-05		CHLOROFORM	9E-01	7E-01	2E-06		none
		Site-related only	2E-01	2E-01	8E-07			1E-01	8E-02	2E-07		
Residential	**0192-H**	Based on Detects only	7E-01	7E-01	2E-05		none	5E-01	4E-01	3E-06		CHLOROFORM
		Site-related only	6E-01	6E-01	3E-06			4E-01	3E-01	5E-07		
Residential	**0193-H**	Based on Detects only	5E-01	5E-01	2E-05		CHLOROFORM; **TCE**	3E-01	3E-01	4E-06		CHLOROFORM
		Site-related only	4E-01	4E-01	3E-06			3E-01	2E-01	5E-07		
Residential	**0194-H**	Based on Detects only	7E-01	7E-01	1E-05		BENZENE; CHLOROFORM; **TCE**	4E-01	4E-01	2E-06		none
		Site-related only	6E-01	6E-01	3E-06			4E-01	3E-01	6E-07		
Residential	**0195-H**	Based on Detects only	4E-01	4E-01	9E-06		BENZENE; CHLOROFORM	2E-01	2E-01	2E-06		none
		Site-related only	9E-02	9E-02	1E-06			6E-02	5E-02	2E-07		
Residential	**0197-H [g]**	Based on Detects only	4E+00	4E+00	3E-05	**TCE**	CHLOROFORM; **PCE; TCE**	2E+00	2E+00	5E-06	**TCE**	CHLOROFORM; **TCE**
		Site-related only	3E+00	3E+00	1E-05			2E+00	2E+00	3E-06		
Residential	**0225-H**	Based on Detects only	2E-01	2E-01	1E-05		1,2-DICHLOROETHANE; 1,4-DICHLOROBENZENE; CHLOROFORM	1E-01	1E-01	3E-06		none
		Site-related only	5E-02	5E-02	9E-07			3E-02	3E-02	2E-07		
Residential	**0230-H**	Based on Detects only	3E-01	3E-01	1E-05		CHLOROFORM	2E-01	2E-01	2E-06		CHLOROFORM
		Site-related only	1E-02	1E-02	2E-07			7E-03	6E-03	4E-08		
Residential	**0255-H**	Based on Detects only	2E-01	2E-01	2E-05		BENZENE; CHLOROFORM	1E-01	1E-01	3E-06		CHLOROFORM
		Site-related only	2E-01	2E-01	1E-06			1E-01	9E-02	3E-07		
Residential	**0256-H**	Based on Detects only	9E-02	9E-02	7E-06		BENZENE; CHLOROFORM	6E-02	5E-02	1E-06		
		Site-related only	5E-02	5E-02	9E-07			3E-02	2E-02	2E-07		

Attachment H.9.2. CTE and RME Risk Summary for Residential Exposures to Indoor Air
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)	Central Tendancy Exposure (CTE)			Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	HI_{adult}	$Risk_{lifetime}$			HI_{child}	HI_{adult}	$Risk_{lifetime}$		
Residential	**0263-H**	Based on Detects only	7E-01	7E-01	1E-05		1,2-DICHLOROETHANE; BENZENE	4E-01	4E-01	2E-06		none
		Site-related only	6E-01	6E-01	3E-06			4E-01	3E-01	6E-07		
Residential	**0273-H**	Based on Detects only	2E-01	2E-01	8E-06		CHLOROFORM	2E-01	1E-01	2E-06		none
		Site-related only	8E-02	8E-02	5E-07			5E-02	4E-02	9E-08		
Residential	**0274-H**	Based on Detects only	6E-01	6E-01	1E-05		CHLOROFORM	4E-01	3E-01	2E-06		none
		Site-related only	3E-01	3E-01	1E-06			2E-01	2E-01	3E-07		
Residential	**0277-H**	Based on Detects only	2E-01	2E-01	9E-06		1,2-DICHLOROETHANE; CHLOROFORM	1E-01	1E-01	2E-06		none
		Site-related only	1E-01	1E-01	7E-07			8E-02	7E-02	1E-07		
Residential	**0302-H**	Based on Detects only	1E-01	1E-01	6E-06		CHLOROFORM	8E-02	7E-02	1E-06		
		Site-related only	2E-02	2E-02	2E-07			1E-02	1E-02	4E-08		
Residential	**0315-H**	Based on Detects only	3E-01	3E-01	7E-06		CHLOROFORM	2E-01	2E-01	1E-06		
		Site-related only	2E-01	2E-01	1E-06			1E-01	1E-01	2E-07		
Residential	**0329-H**	Based on Detects only	1E-01	1E-01	3E-06		none	7E-02	6E-02	7E-07		
		Site-related only	9E-03	9E-03	2E-07			5E-03	5E-03	4E-08		
Residential	**0334-H**	Based on Detects only	1E-01	1E-01	2E-05		BENZENE; CHLOROFORM	7E-02	6E-02	3E-06		CHLOROFORM
		Site-related only	4E-02	4E-02	9E-07			3E-02	2E-02	2E-07		
Residential	**0336-H**	Based on Detects only	5E-01	5E-01	7E-06		BENZENE; CHLOROFORM	3E-01	3E-01	1E-06		
		Site-related only	4E-01	4E-01	2E-06			3E-01	2E-01	3E-07		
Residential	**0347-H**	Based on Detects only	3E-01	3E-01	2E-05		1,2-DICHLOROETHANE; CHLOROFORM	2E-01	2E-01	4E-06		1,2-DICHLOROETHANE; CHLOROFORM
		Site-related only	2E-02	2E-02	2E-07			1E-02	1E-02	5E-08		
Residential	**0381-H**	Based on Detects only	3E-01	3E-01	1E-05		BENZENE; CHLOROFORM; ETHYLBENZENE	2E-01	2E-01	3E-06		CHLOROFORM
		Site-related only	2E-02	2E-02	8E-07			2E-02	1E-02	2E-07		
Residential	**0392-H**	Based on Detects only	2E-01	2E-01	6E-06		BENZENE; CHLOROFORM	1E-01	1E-01	1E-06		
		Site-related only	2E-02	2E-02	4E-07			2E-02	1E-02	8E-08		
Residential	**0395-H**	Based on Detects only	3E-01	3E-01	1E-05		CHLOROFORM	2E-01	2E-01	2E-06		none
		Site-related only	1E-01	1E-01	1E-06			8E-02	7E-02	2E-07		
VAMC Building 20 (Valor House) and Building 32 (Fisher House)												
Residential	**B20-I**	Based on Detects only	5E-01	5E-01	2E-05		1,3-BUTADIENE; CHLOROFORM	3E-01	3E-01	3E-06		none
		Site-related only	1E-01	1E-01	7E-07			9E-02	7E-02	1E-07		
Residential	**B32**	Based on Detects only	3E-01	3E-01	9E-06		1,2-DICHLOROETHANE; CHLOROFORM	2E-01	2E-01	2E-06		none
		Site-related only	1E-02	1E-02	2E-07			8E-03	7E-03	4E-08		

See **Attachment H.6** for detailed risk estimates for each COPC.

Cancer risk is within the USEPA acceptable risk range between 1E-06 and 1E-04
Non-cancer HI is greater than 1 or cancer risk is greater than 1E-04

Notes:
[a] Risk is presented based on detects only (i.e., includes only the detected COPCs) and for site-related COPCs only. The site-related COPCs include PCE, TCE, cis-1,2-DCE, vinyl chloride, and 1,4-dioxane. Risk for site-related COPCs includes both detects and non-detects.
[b] Chemicals are identified as drivers if the individual chemical-specific HQ is greater than 1 or risk is greater than 1E-06. The list of risk drivers is limited to only those chemicals that were detected in groundwater. Site-related risk drivers are shown in **bold**.
[c] For property 0040-H, interim measures have been taken; risk estimates are based on pre-mitigation conditions.
[d] For property 0051-H, interim measures were taken (i.e., basement cracks were sealed); risk estimates are based on pre-mitigation conditions. Post-mitigation conditions show no unacceptable risks.
[e] For property 0054-H, pressure cycling results indicate indoor sources were the primary contributors to overall exposures; the VI pathway is incomplete.
[f] For property 0059-H, risks are being driven by one historical sample collected within inches of a floor drain. If risk estimates were based on 2020 breathing zone samples, no unacceptable risks are present.
[g] For property 0197-H, interim measures were taken (i.e., portable air filters provided) while the TCE source was investigated further.

All ND = all COPCs were non-detect in all samples
cis-1,2-DCE = cis-1,2-Dichloroethene
COPC = chemicals of potential concern
HI = hazard index
HQ = hazard quotient
none = no individual chemicals had an non-cancer HQ greater than 1 or cancer risk greater than 1E-06
PCE = Tetrachloroethene
TCE = Trichloroethene

Attachment H.9.3. CTE and RME Risk Summary for Daycare Children Exposures to Indoor Air
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)	Central Tendancy Exposure (CTE)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	$Risk_{lifetime}$			HI_{child}	$Risk_{lifetime}$		
School Daycares										
Daycare children	**0045-S**	Based on Detects only	2E-01	3E-07			4E-02	7E-08		
		Site-related only	2E-01	3E-07			4E-02	7E-08		
VAMC Building 13										
Daycare children	**B13-I**	Based on Detects only	All ND	All ND			All ND	All ND		
		Site-related only	2E-02	2E-08			4E-03	5E-09		
Churches										
Daycare children	**0366-C**	Based on Detects only	4E-02	5E-07			9E-03	9E-08		
		Site-related only	9E-03	3E-08			2E-03	7E-09		
Hypothetical Residential Daycares										
Daycare children	**0001-H**	Based on Detects only	9E-02	9E-07			2E-02	2E-07		
		Site-related only	3E-02	8E-08			6E-03	2E-08		
Daycare children	**0002-H**	Based on Detects only	7E-02	4E-07			1E-02	8E-08		
		Site-related only	2E-02	5E-08			5E-03	1E-08		
Daycare children	**0003-H**	Based on Detects only	4E-01	2E-05		1,1,2,2-TETRACHLOROETHANE; BENZENE; CHLOROFORM	9E-02	3E-06		CHLOROFORM
		Site-related only	5E-02	1E-07			1E-02	2E-08		
Daycare children	**0004-H**	Based on Detects only	8E-03	3E-07			2E-03	5E-08		
		Site-related only	2E-02	4E-08			3E-03	9E-09		
Daycare children	**0008-H**	Based on Detects only	4E-01	4E-06		BENZENE	9E-02	7E-07		
		Site-related only	3E-02	9E-08			7E-03	2E-08		
Daycare children	**0011-H**	Based on Detects only	9E-02	4E-07			2E-02	8E-08		
		Site-related only	6E-02	8E-08			1E-02	2E-08		
Daycare children	**0012-H**	Based on Detects only	3E-02	4E-07			6E-03	9E-08		
		Site-related only	2E-02	5E-08			5E-03	1E-08		
Daycare children	**0013-H**	Based on Detects only	2E-02	2E-07			5E-03	4E-08		
		Site-related only	2E-02	4E-08			3E-03	9E-09		
Daycare children	**0017-H**	Based on Detects only	7E-02	5E-07			1E-02	1E-07		
		Site-related only	5E-02	8E-08			1E-02	2E-08		
Daycare children	**0018-H**	Based on Detects only	1E+00	7E-06		NAPHTHALENE	2E-01	1E-06		
		Site-related only	9E-02	2E-07			2E-02	3E-08		
Daycare children	**0023-H**	Based on Detects only	1E-02	1E-07			3E-03	2E-08		
		Site-related only	1E-02	4E-08			3E-03	7E-09		
Daycare children	**0025-H**	Based on Detects only	4E-02	1E-06			8E-03	2E-07		
		Site-related only	3E-02	2E-07			5E-03	3E-08		
Daycare children	**0026-H**	Based on Detects only	7E-01	2E-06		none	1E-01	4E-07		
		Site-related only	5E-02	7E-08			1E-02	1E-08		
Daycare children	**0027-H**	Based on Detects only	6E-02	1E-06			1E-02	3E-07		
		Site-related only	2E-02	4E-08			3E-03	9E-09		
Daycare children	**0029-H**	Based on Detects only	5E-02	4E-07			1E-02	9E-08		
		Site-related only	2E-02	5E-08			5E-03	1E-08		
Daycare children	**0030-H**	Based on Detects only	6E-02	4E-07			1E-02	8E-08		
		Site-related only	4E-02	1E-07			9E-03	2E-08		
Daycare children	**0036-H**	Based on Detects only	3E-02	4E-07			6E-03	7E-08		
		Site-related only	4E-02	9E-08			7E-03	2E-08		
Daycare children	**0037-H**	Based on Detects only	3E-01	4E-06		1,2-DICHLOROETHANE	6E-02	7E-07		
		Site-related only	4E-02	1E-07			8E-03	3E-08		
Daycare children	**0038-H**	Based on Detects only	6E-03	4E-07			1E-03	8E-08		
		Site-related only	2E-02	4E-08			3E-03	9E-09		
Daycare children	**0040-H [c]**	Based on Detects only	2E+00	5E-06	none	CHLOROFORM (none for site-related)	3E-01	7E-07		
		Site-related only	1E+00	2E-06			2E-01	3E-07		
Daycare children	**0041-H**	Based on Detects only	4E-02	4E-07			9E-03	9E-08		
		Site-related only	3E-02	4E-08			6E-03	8E-09		
Daycare children	**0047-H**	Based on Detects only	3E-02	2E-08			6E-03	5E-09		
		Site-related only	4E-02	5E-08			9E-03	9E-09		
Daycare children	**0050-H**	Based on Detects only	All ND	All ND			All ND	All ND		
		Site-related only	2E-02	2E-08			3E-03	5E-09		
Daycare children	**0051-H [d]**	Based on Detects only	2E+00	2E-06	none	none	3E-01	4E-07		
		Site-related only	1E+00	1E-06			2E-01	2E-07		
Daycare children	**0052-H**	Based on Detects only	6E-03	5E-09			1E-03	1E-09		
		Site-related only	2E-02	3E-08			4E-03	6E-09		
Daycare children	**0053-H**	Based on Detects only	1E-01	6E-07			3E-02	1E-07		
		Site-related only	1E-01	1E-07			2E-02	3E-08		
Daycare children	**0054-H**	Based on Detects only	6E-01	9E-07			1E-01	2E-07		
		Site-related only	6E-01	9E-07			1E-01	2E-07		
Daycare children	**0055-H**	Based on Detects only	5E-03	4E-09			9E-04	8E-10		
		Site-related only	2E-02	3E-08			4E-03	5E-09		
Daycare children	**0056-H**	Based on Detects only	2E-02	2E-08			4E-03	4E-09		
		Site-related only	4E-02	4E-08			7E-03	8E-09		
Daycare children	**0057-H**	Based on Detects only	All ND	All ND			All ND	All ND		
		Site-related only	2E-02	2E-08			3E-03	5E-09		
Daycare children	**0058-H**	Based on Detects only	All ND	All ND			All ND	All ND		
		Site-related only	2E-02	2E-08			3E-03	5E-09		
Daycare children	**0059-H [e]**	Based on Detects only	2E+00	4E-06	none	none	4E-01	8E-07		
		Site-related only	1E+00	2E-06			3E-01	4E-07		

Attachment H.9.3. CTE and RME Risk Summary for Daycare Children Exposures to Indoor Air
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)	Central Tendancy Exposure (CTE)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	$Risk_{lifetime}$			HI_{child}	$Risk_{lifetime}$		
Daycare children	**0060-H**	Based on Detects only	All ND	All ND			All ND	All ND		
		Site-related only	2E-02	2E-08			3E-03	5E-09		
Daycare children	**0061-H**	Based on Detects only	All ND	All ND			All ND	All ND		
		Site-related only	2E-02	2E-08			3E-03	5E-09		
Daycare children	**0062-H**	Based on Detects only	2E-02	2E-07			4E-03	5E-08		
		Site-related only	2E-02	3E-08			3E-03	6E-09		
Daycare children	**0063-H**	Based on Detects only	1E-02	1E-08			2E-03	2E-09		
		Site-related only	3E-02	3E-08			6E-03	7E-09		
Daycare children	**0064-H**	Based on Detects only	8E-02	4E-07			2E-02	8E-08		
		Site-related only	5E-02	9E-08			1E-02	2E-08		
Daycare children	**0065-H**	Based on Detects only	2E-02	3E-07			4E-03	6E-08		
		Site-related only	7E-03	3E-08			1E-03	5E-09		
Daycare children	**0066-H**	Based on Detects only	5E-02	4E-07			9E-03	8E-08		
		Site-related only	1E-02	4E-08			3E-03	8E-09		
Daycare children	**0069-H**	Based on Detects only	5E-02	7E-07			1E-02	1E-07		
		Site-related only	1E-02	3E-08			2E-03	6E-09		
Daycare children	**0071-H**	Based on Detects only	7E-02	7E-07			1E-02	1E-07		
		Site-related only	4E-03	1E-08			9E-04	2E-09		
Daycare children	**0072-H**	Based on Detects only	3E-02	2E-07			6E-03	3E-08		
		Site-related only	3E-03	9E-09			6E-04	2E-09		
Daycare children	**0076-H**	Based on Detects only	5E-02	6E-07			1E-02	1E-07		
		Site-related only	4E-03	2E-08			9E-04	4E-09		
Daycare children	**0091-H**	Based on Detects only	2E-01	2E-06		none	3E-02	3E-07		
		Site-related only	8E-02	1E-07			2E-02	2E-08		
Daycare children	**0098-H**	Based on Detects only	1E-01	9E-07			2E-02	2E-07		
		Site-related only	5E-02	8E-08			1E-02	2E-08		
Daycare children	**0102-H**	Based on Detects only	2E-01	1E-06			3E-02	2E-07		
		Site-related only	4E-03	3E-08			9E-04	5E-09		
Daycare children	**0118-H**	Based on Detects only	2E-01	9E-07			3E-02	2E-07		
		Site-related only	2E-02	3E-08			4E-03	6E-09		
Daycare children	**0121-H**	Based on Detects only	7E-02	5E-07			1E-02	1E-07		
		Site-related only	2E-02	4E-08			3E-03	8E-09		
Daycare children	**0122-H**	Based on Detects only	6E-02	4E-07			1E-02	8E-08		
		Site-related only	2E-02	2E-08			3E-03	5E-09		
Daycare children	**0133-H**	Based on Detects only	5E-02	2E-06		none	1E-02	4E-07		
		Site-related only	3E-03	1E-08			7E-04	3E-09		
Daycare children	**0135-H**	Based on Detects only	1E-01	9E-07			3E-02	2E-07		
		Site-related only	5E-03	1E-08			1E-03	3E-09		
Daycare children	**0137-H**	Based on Detects only	6E-02	7E-07			1E-02	2E-07		
		Site-related only	1E-02	3E-08			2E-03	6E-09		
Daycare children	**0139-H**	Based on Detects only	4E-01	7E-06		1,4-DICHLOROBENZENE	8E-02	2E-06		none
		Site-related only	4E-03	2E-08			9E-04	4E-09		
Daycare children	**0145-H**	Based on Detects only	3E-02	5E-07			7E-03	1E-07		
		Site-related only	2E-02	2E-08			4E-03	5E-09		
Daycare children	**0146-H**	Based on Detects only	1E-01	5E-07			2E-02	1E-07		
		Site-related only	3E-02	5E-08			7E-03	9E-09		
Daycare children	**0148-H**	Based on Detects only	9E-02	6E-07			2E-02	1E-07		
		Site-related only	1E-02	2E-08			2E-03	4E-09		
Daycare children	**0153-H**	Based on Detects only	7E-02	4E-07			1E-02	8E-08		
		Site-related only	6E-03	2E-08			1E-03	4E-09		
Daycare children	**0162-H**	Based on Detects only	5E-02	7E-07			1E-02	1E-07		
		Site-related only	4E-03	2E-08			8E-04	3E-09		
Daycare children	**0166-H**	Based on Detects only	3E-01	6E-07			7E-02	1E-07		
		Site-related only	8E-02	1E-07			2E-02	2E-08		
Daycare children	**0172-H**	Based on Detects only	3E-02	1E-07			6E-03	3E-08		
		Site-related only	1E-02	2E-08			3E-03	4E-09		
Daycare children	**0173-H**	Based on Detects only	6E-02	6E-07			1E-02	1E-07		
		Site-related only	2E-02	3E-08			5E-03	7E-09		
Daycare children	**0174-H**	Based on Detects only	1E-01	2E-06		none	2E-02	5E-07		
		Site-related only	1E-02	6E-08			2E-03	1E-08		
Daycare children	**0180-H**	Based on Detects only	1E-02	1E-07			2E-03	2E-08		
		Site-related only	1E-03	7E-09			2E-04	1E-09		
Daycare children	**0189-H**	Based on Detects only	2E-01	3E-07			3E-02	6E-08		
		Site-related only	2E-02	3E-08			4E-03	6E-09		
Daycare children	**0192-H**	Based on Detects only	9E-02	5E-07			2E-02	1E-07		
		Site-related only	7E-02	9E-08			2E-02	2E-08		
Daycare children	**0193-H**	Based on Detects only	7E-02	5E-07			1E-02	1E-07		
		Site-related only	6E-02	1E-07			1E-02	2E-08		
Daycare children	**0194-H**	Based on Detects only	9E-02	4E-07			2E-02	8E-08		
		Site-related only	8E-02	1E-07			2E-02	2E-08		
Daycare children	**0195-H**	Based on Detects only	5E-02	3E-07			1E-02	6E-08		
		Site-related only	1E-02	4E-08			2E-03	7E-09		
Daycare children	**0197-H**	Based on Detects only	4E-01	9E-07			9E-02	2E-07		
		Site-related only	4E-01	6E-07			9E-02	1E-07		

Attachment H.9.3. CTE and RME Risk Summary for Daycare Children Exposures to Indoor Air
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)	Central Tendancy Exposure (CTE)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{child}	$Risk_{lifetime}$			HI_{child}	$Risk_{lifetime}$		
Daycare children	**0225-H**	Based on Detects only	2E-02	4E-07			5E-03	8E-08		
		Site-related only	6E-03	3E-08			1E-03	6E-09		
Daycare children	**0230-H**	Based on Detects only	4E-02	3E-07			8E-03	7E-08		
		Site-related only	1E-03	7E-09			3E-04	1E-09		
Daycare children	**0255-H**	Based on Detects only	3E-02	5E-07			6E-03	1E-07		
		Site-related only	2E-02	5E-08			4E-03	1E-08		
Daycare children	**0256-H**	Based on Detects only	1E-02	2E-07			2E-03	4E-08		
		Site-related only	6E-03	3E-08			1E-03	6E-09		
Daycare children	**0263-H**	Based on Detects only	9E-02	3E-07			2E-02	7E-08		
		Site-related only	7E-02	1E-07			2E-02	2E-08		
Daycare children	**0273-H**	Based on Detects only	3E-02	2E-07			6E-03	5E-08		
		Site-related only	9E-03	1E-08			2E-03	3E-09		
Daycare children	**0274-H**	Based on Detects only	8E-02	3E-07			2E-02	6E-08		
		Site-related only	4E-02	4E-08			8E-03	8E-09		
Daycare children	**0277-H**	Based on Detects only	3E-02	3E-07			6E-03	5E-08		
		Site-related only	2E-02	2E-08			3E-03	4E-09		
Daycare children	**0302-H**	Based on Detects only	2E-02	2E-07			3E-03	4E-08		
		Site-related only	2E-03	8E-09			5E-04	2E-09		
Daycare children	**0315-H**	Based on Detects only	4E-02	2E-07			8E-03	5E-08		
		Site-related only	2E-02	4E-08			5E-03	8E-09		
Daycare children	**0329-H**	Based on Detects only	1E-02	1E-07			3E-03	2E-08		
		Site-related only	1E-03	6E-09			2E-04	1E-09		
Daycare children	**0334-H**	Based on Detects only	1E-02	5E-07			3E-03	1E-07		
		Site-related only	5E-03	3E-08			1E-03	6E-09		
Daycare children	**0336-H**	Based on Detects only	7E-02	2E-07			1E-02	4E-08		
		Site-related only	5E-02	5E-08			1E-02	1E-08		
Daycare children	**0347-H**	Based on Detects only	4E-02	6E-07			8E-03	1E-07		
		Site-related only	2E-03	8E-09			5E-04	2E-09		
Daycare children	**0381-H**	Based on Detects only	4E-02	4E-07			8E-03	9E-08		
		Site-related only	3E-03	3E-08			6E-04	5E-09		
Daycare children	**0392-H**	Based on Detects only	2E-02	2E-07			5E-03	3E-08		
		Site-related only	3E-03	2E-08			6E-04	3E-09		
Daycare children	**0395-H**	Based on Detects only	4E-02	3E-07			9E-03	6E-08		
		Site-related only	2E-02	4E-08			3E-03	9E-09		

See **Attachment H.6** for detailed risk estimates for each COPC.

	Cancer risk is within the USEPA acceptable risk range between 1E-06 and 1E-04
	Non-cancer HI is greater than 1 or cancer risk is greater than 1E-04

Notes:

[a] Risk is presented based on detects only (i.e., includes only the detected COPCs) and for site-related COPCs only. The site-related COPCs include PCE, TCE, cis-1,2-DCE, vinyl chloride, and 1,4-dioxane. Risk for site-related COPCs includes both detects and non-detects.

[b] Chemicals are identified as drivers if the individual chemical-specific HQ is greater than 1 or risk is greater than 1E-06. The list of risk drivers is limited to only those chemicals that were detected in groundwater. Site-related risk drivers are shown in **bold**.

[c] For property 0040-H, interim measures have been taken; risk estimates are based on pre-mitigation conditions.

[d] For property 0051-H, interim measures were taken (i.e., basement cracks were sealed); risk estimates are based on pre-mitigation conditions. Post-mitigation conditions show no unacceptable risks.

[e] For property 0059-H, risks are being driven by one historical sample collected within inches of a floor drain. If risk estimates were based on 2020 breathing zone samples, no unacceptable risks are present.

All ND = all COPCs were non-detect in all samples
cis-1,2-DCE = cis-1,2-Dichloroethene
COPC = chemicals of potential concern
HI = hazard index
HQ = hazard quotient
none = no individual chemicals had an non-cancer HQ greater than 1 or cancer risk greater than 1E-06
PCE = Tetrachloroethene
TCE = Trichloroethene

Attachment H.9.4. CTE and RME Risk Summary for Indoor (Commercial) Worker Exposures to Indoor Air
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)	Central Tendancy Exposure (CTE)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{adult}	$Risk_{lifetime}$			HI_{adult}	$Risk_{lifetime}$		
Churches										
Indoor Worker	**0366-C**	Based on Detects only	8E-02	4E-06		none	7E-02	8E-07		
		Site-related only	2E-02	2E-07			1E-02	5E-08		
Residental Properties										
Indoor Worker	**0001-H**	Based on Detects only	2E-01	7E-06		1,2-DICHLOROETHANE; CHLOROFORM	2E-01	2E-06		none
		Site-related only	6E-02	3E-07			5E-02	7E-08		
Indoor Worker	**0002-H**	Based on Detects only	1E-01	3E-06		CHLOROFORM	1E-01	7E-07		
		Site-related only	4E-02	2E-07			4E-02	4E-08		
Indoor Worker	**0003-H**	Based on Detects only	8E-01	1E-04		1,1,2,2-TETRACHLOROETHANE; BENZENE; CHLOROFORM; ETHYLBENZENE	7E-01	3E-05		1,1,2,2-TETRACHLOROETHANE; BENZENE; CHLOROFORM
		Site-related only	1E-01	6E-07			9E-02	1E-07		
Indoor Worker	**0004-H**	Based on Detects only	2E-02	2E-06		CHLOROFORM	1E-02	5E-07		
		Site-related only	3E-02	2E-07			3E-02	4E-08		
Indoor Worker	**0008-H**	Based on Detects only	8E-01	3E-05		BENZENE; ETHYLBENZENE	7E-01	7E-06		BENZENE
		Site-related only	6E-02	3E-07			6E-02	6E-08		
Indoor Worker	**0011-H**	Based on Detects only	2E-01	3E-06		none	1E-01	7E-07		
		Site-related only	1E-01	5E-07			1E-01	1E-07		
Indoor Worker	**0012-H**	Based on Detects only	6E-02	4E-06		CHLOROFORM	5E-02	8E-07		
		Site-related only	4E-02	2E-07			4E-02	5E-08		
Indoor Worker	**0013-H**	Based on Detects only	4E-02	2E-06			4E-02	4E-07		
		Site-related only	3E-02	1E-07			3E-02	3E-08		
Indoor Worker	**0017-H**	Based on Detects only	1E-01	4E-06		CHLOROFORM	1E-01	9E-07		
		Site-related only	1E-01	4E-07			9E-02	1E-07		
Indoor Worker	**0018-H**	Based on Detects only	2E+00	6E-05	none	1,2-DIBROMOETHANE; 1,2-DICHLOROETHANE; BENZENE; BENZYL CHLORIDE; CHLOROFORM; HEXACHLORO-1,3-BUTADIENE; NAPHTHALENE	2E+00	1E-05	none	HEXACHLORO-1,3-BUTADIENE; NAPHTHALENE
		Site-related only	2E-01	8E-07			2E-01	2E-07		
Indoor Worker	**0023-H**	Based on Detects only	3E-02	9E-07			2E-02	2E-07		
		Site-related only	2E-02	1E-07			2E-02	3E-08		
Indoor Worker	**0025-H**	Based on Detects only	8E-02	8E-06		1,4-DICHLOROBENZENE; CHLOROFORM	7E-02	2E-06		none
		Site-related only	5E-02	1E-06			4E-02	3E-07		
Indoor Worker	**0026-H**	Based on Detects only	1E+00	2E-05		1,2-DICHLOROETHANE; BROMODICHLOROMETHANE; CHLOROFORM	1E+00	4E-06		none
		Site-related only	1E-01	4E-07			9E-02	1E-07		
Indoor Worker	**0027-H**	Based on Detects only	1E-01	1E-05		1,2-DICHLOROETHANE; 1,4-DICHLOROBENZENE	1E-01	2E-06		1,2-DICHLOROETHANE
		Site-related only	3E-02	2E-07			3E-02	4E-08		
Indoor Worker	**0029-H**	Based on Detects only	9E-02	3E-06		CHLOROFORM	8E-02	8E-07		
		Site-related only	4E-02	3E-07			4E-02	7E-08		
Indoor Worker	**0030-H**	Based on Detects only	1E-01	3E-06		1,2-DICHLOROETHANE	1E-01	7E-07		
		Site-related only	8E-02	3E-07			7E-02	8E-08		
Indoor Worker	**0036-H**	Based on Detects only	5E-02	3E-06		CHLOROFORM	5E-02	7E-07		
		Site-related only	7E-02	3E-07			6E-02	7E-08		
Indoor Worker	**0037-H**	Based on Detects only	5E-01	3E-05		,2-DICHLOROETHANE; BENZENE; BROMODICHLOROMETHANE; CHLOROFORM	5E-01	7E-06		1,2-DICHLOROETHANE
		Site-related only	7E-02	9E-07			6E-02	2E-07		
Indoor Worker	**0038-H**	Based on Detects only	1E-02	3E-06		CHLOROFORM	1E-02	7E-07		
		Site-related only	3E-02	2E-07			3E-02	4E-08		
Indoor Worker	**0040-H [c]**	Based on Detects only	3E+00	3E-05	none	1,3-BUTADIENE; BENZENE; CHLOROFORM; **PCE; TCE**	2E+00	5E-06	none	CHLOROFORM
		Site-related only	2E+00	8E-06			2E+00	2E-06		
Indoor Worker	**0041-H**	Based on Detects only	8E-02	3E-06		CHLOROFORM	7E-02	8E-07		
		Site-related only	6E-02	2E-07			5E-02	5E-08		
Indoor Worker	**0047-H**	Based on Detects only	5E-02	2E-07			5E-02	4E-08		
		Site-related only	8E-02	3E-07			7E-02	6E-08		
Indoor Worker	**0050-H**	Based on Detects only	All ND	All ND			All ND	All ND		
		Site-related only	3E-02	9E-08			3E-02	2E-08		

Attachment H.9.4. CTE and RME Risk Summary for Indoor (Commercial) Worker Exposures to Indoor Air
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)	Central Tendancy Exposure (CTE)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{adult}	$Risk_{lifetime}$			HI_{adult}	$Risk_{lifetime}$		
Indoor Worker	**0051-H [d]**	Based on Detects only	3E+00	2E-05	**PCE**	CHLOROFORM; **PCE**	3E+00	4E-06	**PCE**	**PCE**
		Site-related only	2E+00	9E-06			2E+00	2E-06		
Indoor Worker	**0052-H**	Based on Detects only	1E-02	4E-08			9E-03	9E-09		
		Site-related only	4E-02	1E-07			3E-02	3E-08		
Indoor Worker	**0053-H**	Based on Detects only	3E-01	5E-06		CHLOROFORM	2E-01	1E-06		
		Site-related only	2E-01	8E-07			2E-01	2E-07		
Indoor Worker	**0054-H [e]**	Based on Detects only	1E+00	4E-06		**TCE**	1E+00	8E-07		
		Site-related only	1E+00	4E-06			1E+00	8E-07		
Indoor Worker	**0055-H**	Based on Detects only	9E-03	3E-08			8E-03	7E-09		
		Site-related only	4E-02	1E-07			3E-02	3E-08		
Indoor Worker	**0056-H**	Based on Detects only	4E-02	1E-07			3E-02	3E-08		
		Site-related only	7E-02	2E-07			6E-02	5E-08		
Indoor Worker	**0057-H**	Based on Detects only	All ND	All ND			All ND	All ND		
		Site-related only	3E-02	9E-08			3E-02	2E-08		
Indoor Worker	**0058-H**	Based on Detects only	All ND	All ND			All ND	All ND		
		Site-related only	3E-02	9E-08			3E-02	2E-08		
Indoor Worker	**0059-H [f]**	Based on Detects only	3E+00	3E-05	none	**1,4-DIOXANE**; CHLOROFORM; HEXACHLORO-1,3-BUTADIENE; **PCE; TCE**	3E+00	6E-06	none	HEXACHLORO-1,3-BUTADIENE
		Site-related only	3E+00	1E-05			2E+00	3E-06		
Indoor Worker	**0060-H**	Based on Detects only	All ND	All ND			All ND	All ND		
		Site-related only	3E-02	9E-08			3E-02	2E-08		
Indoor Worker	**0061-H**	Based on Detects only	All ND	All ND			All ND	All ND		
		Site-related only	3E-02	9E-08			3E-02	2E-08		
Indoor Worker	**0062-H**	Based on Detects only	4E-02	2E-06		none	4E-02	4E-07		
		Site-related only	3E-02	1E-07			3E-02	3E-08		
Indoor Worker	**0063-H**	Based on Detects only	2E-02	8E-08			2E-02	2E-08		
		Site-related only	5E-02	2E-07			5E-02	4E-08		
Indoor Worker	**0064-H**	Based on Detects only	1E-01	3E-06		none	1E-01	7E-07		
		Site-related only	1E-01	6E-07			8E-02	1E-07		
Indoor Worker	**0065-H**	Based on Detects only	4E-02	2E-06		none	4E-02	6E-07		
		Site-related only	1E-02	1E-07			1E-02	3E-08		
Indoor Worker	**0066-H**	Based on Detects only	9E-02	3E-06		none	8E-02	7E-07		
		Site-related only	3E-02	2E-07			2E-02	6E-08		
Indoor Worker	**0069-H**	Based on Detects only	9E-02	5E-06		1,2-DICHLOROETHANE	8E-02	1E-06		
		Site-related only	2E-02	2E-07			2E-02	4E-08		
Indoor Worker	**0071-H**	Based on Detects only	1E-01	5E-06		1,2-DICHLOROETHANE; CHLOROFORM	1E-01	1E-06		
		Site-related only	8E-03	5E-08			7E-03	1E-08		
Indoor Worker	**0072-H**	Based on Detects only	5E-02	1E-06		none	5E-02	3E-07		
		Site-related only	5E-03	6E-08			5E-03	1E-08		
Indoor Worker	**0076-H**	Based on Detects only	9E-02	5E-06		BENZENE	8E-02	1E-06		
		Site-related only	8E-03	1E-07			7E-03	3E-08		
Indoor Worker	**0091-H**	Based on Detects only	3E-01	1E-05		BROMODICHLOROMETHANE; CHLOROFORM	3E-01	3E-06		CHLOROFORM
		Site-related only	2E-01	6E-07			1E-01	2E-07		
Indoor Worker	**0098-H**	Based on Detects only	2E-01	7E-06		BENZENE	2E-01	2E-06		none
		Site-related only	1E-01	4E-07			9E-02	8E-08		
Indoor Worker	**0102-H**	Based on Detects only	3E-01	9E-06		1,2-DICHLOROETHANE; BENZENE; CHLOROFORM	2E-01	2E-06		none
		Site-related only	8E-03	2E-07			7E-03	4E-08		
Indoor Worker	**0118-H**	Based on Detects only	3E-01	6E-06		CHLOROFORM	3E-01	1E-06		
		Site-related only	3E-02	2E-07			3E-02	4E-08		
Indoor Worker	**0121-H**	Based on Detects only	1E-01	4E-06		CHLOROFORM	1E-01	1E-06		
		Site-related only	3E-02	2E-07			3E-02	5E-08		
Indoor Worker	**0122-H**	Based on Detects only	1E-01	3E-06		none	1E-01	7E-07		
		Site-related only	3E-02	2E-07			3E-02	4E-08		

Attachment H.9.4. CTE and RME Risk Summary for Indoor (Commercial) Worker Exposures to Indoor Air
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)	Central Tendancy Exposure (CTE)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{adult}	$Risk_{lifetime}$			HI_{adult}	$Risk_{lifetime}$		
Indoor Worker	**0133-H**	Based on Detects only	9E-02	1E-05		BROMODICHLOROMETHANE; CHLOROFORM	8E-02	3E-06		CHLOROFORM
		Site-related only	6E-03	8E-08			5E-03	2E-08		
Indoor Worker	**0135-H**	Based on Detects only	2E-01	7E-06		CHLOROFORM; ETHYLBENZENE	2E-01	2E-06		
		Site-related only	1E-02	8E-08			9E-03	2E-08		
Indoor Worker	**0137-H**	Based on Detects only	1E-01	6E-06		BENZENE; CHLOROFORM	1E-01	1E-06		
		Site-related only	2E-02	1E-07			2E-02	3E-08		
Indoor Worker	**0139-H**	Based on Detects only	7E-01	6E-05		1,3-BUTADIENE; 1,4-DICHLOROBENZENE; CHLOROFORM	6E-01	1E-05		1,4-DICHLOROBENZENE
		Site-related only	8E-03	1E-07			7E-03	3E-08		
Indoor Worker	**0145-H**	Based on Detects only	6E-02	4E-06		1,4-DICHLOROBENZENE	5E-02	1E-06		
		Site-related only	3E-02	1E-07			3E-02	3E-08		
Indoor Worker	**0146-H**	Based on Detects only	2E-01	4E-06		CHLOROFORM	2E-01	9E-07		
		Site-related only	6E-02	3E-07			5E-02	8E-08		
Indoor Worker	**0148-H**	Based on Detects only	2E-01	4E-06		CHLOROFORM	1E-01	1E-06		
		Site-related only	2E-02	1E-07			2E-02	3E-08		
Indoor Worker	**0153-H**	Based on Detects only	1E-01	3E-06		CHLOROFORM	1E-01	7E-07		
		Site-related only	1E-02	1E-07			1E-02	3E-08		
Indoor Worker	**0162-H**	Based on Detects only	1E-01	5E-06		1,2-DICHLOROETHANE; BENZENE	8E-02	1E-06		
		Site-related only	8E-03	1E-07			7E-03	2E-08		
Indoor Worker	**0166-H**	Based on Detects only	6E-01	4E-06		CHLOROFORM	6E-01	1E-06		
		Site-related only	1E-01	5E-07			1E-01	1E-07		
Indoor Worker	**0172-H**	Based on Detects only	5E-02	1E-06		none	5E-02	2E-07		
		Site-related only	3E-02	1E-07			2E-02	3E-08		
Indoor Worker	**0173-H**	Based on Detects only	1E-01	5E-06		CHLOROFORM	1E-01	1E-06		
		Site-related only	4E-02	2E-07			4E-02	5E-08		
Indoor Worker	**0174-H**	Based on Detects only	2E-01	2E-05		1,2-DICHLOROETHANE; BROMODICHLOROMETHANE; CHLOROFORM	2E-01	4E-06		CHLOROFORM
		Site-related only	2E-02	3E-07			2E-02	7E-08		
Indoor Worker	**0180-H**	Based on Detects only	2E-02	9E-07			2E-02	2E-07		
		Site-related only	2E-03	4E-08			2E-03	1E-08		
Indoor Worker	**0189-H**	Based on Detects only	3E-01	2E-06		CHLOROFORM	3E-01	6E-07		
		Site-related only	4E-02	2E-07			3E-02	4E-08		
Indoor Worker	**0192-H**	Based on Detects only	2E-01	4E-06		CHLOROFORM	2E-01	9E-07		
		Site-related only	1E-01	5E-07			1E-01	1E-07		
Indoor Worker	**0193-H**	Based on Detects only	1E-01	4E-06		CHLOROFORM	1E-01	1E-06		
		Site-related only	1E-01	5E-07			9E-02	1E-07		
Indoor Worker	**0194-H**	Based on Detects only	2E-01	3E-06		none	1E-01	7E-07		
		Site-related only	1E-01	6E-07			1E-01	1E-07		
Indoor Worker	**0195-H**	Based on Detects only	9E-02	2E-06		none	8E-02	5E-07		
		Site-related only	2E-02	2E-07			2E-02	5E-08		
Indoor Worker	**0197-H**	Based on Detects only	8E-01	5E-06		CHLOROFORM; **TCE**	7E-01	1E-06		
		Site-related only	8E-01	2E-06			7E-01	6E-07		
Indoor Worker	**0225-H**	Based on Detects only	5E-02	3E-06		none	4E-02	7E-07		
		Site-related only	1E-02	2E-07			1E-02	4E-08		
Indoor Worker	**0230-H**	Based on Detects only	8E-02	3E-06		CHLOROFORM	7E-02	6E-07		
		Site-related only	3E-03	4E-08			2E-03	9E-09		
Indoor Worker	**0255-H**	Based on Detects only	5E-02	4E-06		CHLOROFORM	5E-02	9E-07		
		Site-related only	4E-02	3E-07			4E-02	6E-08		
Indoor Worker	**0256-H**	Based on Detects only	2E-02	2E-06		none	2E-02	4E-07		
		Site-related only	1E-02	2E-07			1E-02	4E-08		
Indoor Worker	**0263-H**	Based on Detects only	2E-01	2E-06		none	1E-01	5E-07		
		Site-related only	1E-01	6E-07			1E-01	1E-07		
Indoor Worker	**0273-H**	Based on Detects only	6E-02	2E-06		none	5E-02	4E-07		
		Site-related only	2E-02	1E-07			2E-02	2E-08		
Indoor Worker	**0274-H**	Based on Detects only	2E-01	2E-06		none	1E-01	5E-07		
		Site-related only	7E-02	3E-07			6E-02	7E-08		

Attachment H.9.4. CTE and RME Risk Summary for Indoor (Commercial) Worker Exposures to Indoor Air
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)	Central Tendancy Exposure (CTE)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{adult}	$Risk_{lifetime}$			HI_{adult}	$Risk_{lifetime}$		
Indoor Worker	**0277-H**	Based on Detects only	6E-02	2E-06		none	5E-02	5E-07		
		Site-related only	3E-02	1E-07			3E-02	3E-08		
Indoor Worker	**0302-H**	Based on Detects only	3E-02	1E-06			3E-02	3E-07		
		Site-related only	4E-03	4E-08			4E-03	1E-08		
Indoor Worker	**0315-H**	Based on Detects only	8E-02	2E-06		none	7E-02	4E-07		
		Site-related only	5E-02	2E-07			4E-02	4E-08		
Indoor Worker	**0329-H**	Based on Detects only	2E-02	8E-07			2E-02	2E-07		
		Site-related only	2E-03	4E-08			2E-03	9E-09		
Indoor Worker	**0334-H**	Based on Detects only	2E-02	4E-06		CHLOROFORM	2E-02	1E-06		
		Site-related only	9E-03	2E-07			8E-03	4E-08		
Indoor Worker	**0336-H**	Based on Detects only	1E-01	2E-06		none	1E-01	4E-07		
		Site-related only	9E-02	4E-07			8E-02	9E-08		
Indoor Worker	**0347-H**	Based on Detects only	7E-02	5E-06		1,2-DICHLOROETHANE; CHLOROFORM	7E-02	1E-06		
		Site-related only	4E-03	5E-08			4E-03	1E-08		
Indoor Worker	**0381-H**	Based on Detects only	7E-02	3E-06		CHLOROFORM	6E-02	8E-07		
		Site-related only	6E-03	2E-07			5E-03	4E-08		
Indoor Worker	**0392-H**	Based on Detects only	4E-02	1E-06			4E-02	3E-07		
		Site-related only	6E-03	8E-08			5E-03	2E-08		
Indoor Worker	**0395-H**	Based on Detects only	8E-02	2E-06		none	7E-02	5E-07		
		Site-related only	3E-02	2E-07			3E-02	5E-08		

See **Attachment H.6** for detailed risk estimates for each COPC.

Cancer risk is within the USEPA acceptable risk range between 1E-06 and 1E-04
Non-cancer HI is greater than 1 or cancer risk is greater than 1E-04

Notes:
[a] Risk is presented based on detects only (i.e., includes only the detected COPCs) and for site-related COPCs only. The site-related COPCs include PCE, TCE, cis-1,2-DCE, vinyl chloride, and 1,4-dioxane. Risk for site-related COPCs includes both detects and non-detects.
[b] Chemicals are identified as drivers if the individual chemical-specific HQ is greater than 1 or risk is greater than 1E-06. The list of risk drivers is limited to only those chemicals that were detected in groundwater. Site-related risk drivers are shown in **bold**.
[c] For property 0040-H, interim measures have been taken; risk estimates are based on pre-mitigation conditions.
[d] For property 0051-H, interim measures were taken (i.e., basement cracks were sealed); risk estimates are based on pre-mitigation conditions. Post-mitigation conditions show no unacceptable risks.
[e] For property 0054-H, pressure cycling results indicate indoor sources were the primary contributors to overall exposures; the VI pathway is incomplete.
[f] For property 0059-H, risks are being driven by one historical sample collected within inches of a floor drain. If risk estimates were based on 2020 breathing zone samples, no unacceptable risks are present.

All ND = all COPCs were non-detect in all samples
cis-1,2-DCE = cis-1,2-Dichloroethene
COPC = chemicals of potential concern
HI = hazard index
HQ = hazard quotient
none = no individual chemicals had an non-cancer HQ greater than 1 or cancer risk greater than 1E-06
PCE = Tetrachloroethene
TCE = Trichloroethene

Attachment H.9.5. CTE and RME Risk Summary for Worker Exposures to Indoor Air Inside VAMC Buildings
700 S 1600 E PCE Plume Superfund Site, Salt Lake City, Utah

Receptor	Property ID	Risk Grouping [a]	Reasonable Maximum Exposure (RME)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)	Central Tendancy Exposure (CTE)		Non-cancer Drivers [b] (Detects Only)	Cancer Risk Drivers [b] (Detects Only)
			HI_{adult}	$Risk_{lifetime}$			HI_{adult}	$Risk_{lifetime}$		
Indoor Worker	**Building 6 [c]**	Based on Detects only	7E+00	3E-05	**PCE**	CHLOROFORM; **PCE; TCE**	6E+00	7E-06	**PCE**	**PCE**
		Site-related only	6E+00	2E-05			5E+00	5E-06		
Indoor Worker	**Building 7**	Based on Detects only	3E+00	8E-06	ETHYL ACETATE	BENZENE; **TCE**	3E+00	2E-06	ETHYL ACETATE	none
		Site-related only	9E-01	3E-06			8E-01	8E-07		
Indoor Worker	**Building 13**	Based on Detects only	All ND	All ND			All ND	All ND		
		Site-related only	3E-02	1E-07			3E-02	2E-08		
Indoor Worker	**Building 20**	Based on Detects only	1E-01	4E-06		1,3-BUTADIENE	1E-01	9E-07		
		Site-related only	3E-02	1E-07			3E-02	3E-08		
Indoor Worker	**Building 32**	Based on Detects only	8E-02	2E-06		none	7E-02	5E-07		
		Site-related only	3E-03	4E-08			3E-03	1E-08		

See **Attachment H.6** for detailed risk estimates for each COPC.

Cancer risk is within the USEPA acceptable risk range between 1E-06 and 1E-04
Non-cancer HI is greater than 1 or cancer risk is greater than 1E-04

Notes:
[a] Risk is presented based on detects only (i.e., includes only the detected COPCs) and for site-related COPCs only. The site-related COPCs include PCE, TCE, cis-1,2-DCE, vinyl chloride, and 1,4-dioxane. Risk for site-related COPCs includes both detects and non-detects.
[b] Chemicals are identified as drivers if the individual chemical-specific HQ is greater than 1 or risk is greater than 1E-06. The list of risk drivers is limited to only those chemicals that were detected in groundwater. Site-related risk drivers are shown in **bold**.
[c] Indoor sources were present and removed from Building 6. If risk estimates were based on the most recent sampling (collected after sources were removed), no unacceptable risks are present.

All ND = all COPCs were non-detect in all samples
cis-1,2-DCE = cis-1,2-Dichloroethene
COPC = chemicals of potential concern
HI = hazard index
HQ = hazard quotient
none = no individual chemicals had an non-cancer HQ greater than 1 or cancer risk greater than 1E-06
PCE = Tetrachloroethene
TCE = Trichloroethene
VAMC = Veterans Affairs Medical Center

Attachment H.10

Correlations Between Media and Analytes

ATTACHMENT H.10 – CORRELATIONS BETWEEN MEDIA AND ANALYTES

To understand the potential relationships between the chemical concentrations in the different media types (indoor air, soil gas, and groundwater) and between different chemicals in the same medium, regressions between various combinations were considered. For example, if a positive relationship is observed between the concentrations for a given chemical in indoor air and soil gas or indoor air and groundwater, this would support the conclusion that this chemical in indoor air is influenced by vapor intrusion (VI). If a positive relationship is observed between two chemicals in the same medium, this could indicate the that both chemicals are derived from the same source. This correlation analysis focuses on the chemicals of potential concern (COPCs) for indoor air that were frequently identified as being risk drivers. The list of COPCs evaluated included PCE, TCE, 3-butadiene, 1,2-dichloroethane, benzene, chloroform, and ethylbenzene.

Correlations Between Media

For each location where samples of different media (i.e., indoor air, soil gas, groundwater) have been analyzed, the regression presents the maximum concentration across all samples of the respective analyte in the respective media. In the regression figures, the risk-based screening levels for each medium are shown for reference. For groundwater, the lower of the U.S. Environmental Protection Agency (EPA) residential tap water regional screening level (RSL) or the residential groundwater vapor intrusion screening level (VISL) is shown. For soil gas, the residential soil gas VISL is shown. For indoor air, the residential indoor air RSL is shown. All screening levels are based on a target hazard quotient of 1 or a target cancer risk of 1E-06. In the figures, the vertical green line indicates the residential screening level for the medium represented on the x-axis, and the horizontal yellow line indicates the residential screening level for the medium represented on the y-axis. Initially, regressions were evaluated on a site-wide basis (across all locations). As appropriate, subsets of locations, such as the subset of locations on the Veterans Affairs Medical Center (VAMC) campus, locations within Sunnyside Park, and/or locations within the East Side Springs (ESS) area, were evaluated to assess if there were differences in relationships as a function of distance from the source area.

The following bullets describe the relationships between media for each COPC.

- **PCE (Attachment Figure H.10-1).** There was no observable relationship between PCE concentrations in groundwater and soil gas (R^2=0.005, Panel A), soil gas and indoor air (R^2=0.001, Panel B), or groundwater and indoor air (R^2=0.002, Panel C). The lack of relationship between soil gas and indoor air held when confined to the ESS area only (R^2=0.001, Panel D).

- **TCE (Attachment Figure H.10-2).** A weakly negative relationship was observed between TCE in groundwater and soil gas (R^2=0.30, Panel A), but there was no relationship between soil gas and indoor air (R^2=0.03, Panel B). A weakly positive relationship was observed between groundwater and indoor air (R^2=0.18, Panel C), and no relationship was observed between soil gas and indoor air in the ESS area (R^2=0.01, Panel D).

- **Chloroform (Attachment Figure H.10-3).** There was a positive association between chloroform in groundwater and soil gas (R^2=0.62, Panel A). However, this relationship does not translate to indoor air, with no correlation observed between soil gas and indoor air (R^2=0.08,

Panel B) and a weak relationship between chloroform concentrations in groundwater and indoor air (R^2=0.39, Panel C).

- **Benzene (Attachment Figure H.10-4).** There were limited detections in collocated media available for determining relationships between benzene concentrations in groundwater, soil gas, and indoor air. While there was a weak correlation between groundwater and indoor air (R^2=0.51, Panel C), the regression for groundwater and soil gas showed no relationship (R^2=0.01, Panel A), or for soil gas and indoor air (R^2=0.06, Panel B), suggesting indoor air concentrations are driven by indoor sources and not groundwater impacts.

- **Ethylbenzene (Attachment Figure H.10-5).** Similar to benzene, there were limited detections in collocated media available for determining relationships between ethylbenzene concentrations in groundwater, soil gas, and indoor air. Only three paired data were available for soil gas and groundwater, resulting in an artificially high correlation (R^2=0.99, Panel A). More paired data was available for indoor air and soil gas, and groundwater and indoor air, but no apparent relationship existed between these media pairings (R^2=0.13, Panel B; and (R^2=0.28, Panel C, respectively), suggesting indoor air exposures are driven by indoor sources.

- **1,2-Dichloroethane.** Similar to benzene and ethylbenzene, there were limited detections in collocated media available for determining relationships between 1,2-dichloroethane in groundwater, soil gas, and indoor air. Notably, this analyte was not detected in any groundwater samples, and only four paired data were available for soil gas and indoor air (R^2=0.43, data not shown). The paucity of detections in groundwater and inverse relationship between soil gas and indoor air, suggest that exposures to 1,2-dichloroethane are attributable to indoor sources.

- **1,3-Butadiene**. 1,3-Butadiene is a non-soluble gas and was not analyzed in groundwater. No paired data were available for this analyte in indoor air and soil gas.

Correlations Between Analytes

Each sample is analyzed for multiple chemicals. The regression compares the reported concentration for each COPC for the same sample. In the regression figures, the risk-based screening levels for each medium are shown for reference. In the figures, the vertical green line indicates the residential screening level for the chemical represented on the x-axis, and the horizontal yellow line indicates the residential screening level for the chemical represented on the y-axis. Initially, regressions were evaluated on a site-wide basis (across all locations). As appropriate, subsets of locations (i.e., VAMC campus, Sunnyside Park, ESS area) were evaluated to assess if there were differences in relationships as a function of distance from the source area.

The following bullets describe the relationships between COPCs for each medium.

- **Indoor Air (Attachment Figure H.10-6).** PCE and TCE concentrations were weakly correlated in indoor air across the study area (R^2=0.18, Panel A). This lack of relationship holds when confined to the ESS area (R^2=0.22, Panel B). However, strong positive associations were observed between benzene and ethylbenzene (R^2=0.82, Panel C) and benzene and chloroform (R^2=0.85, Panel D) in indoor air; however, these relationships may be artificially inflated by

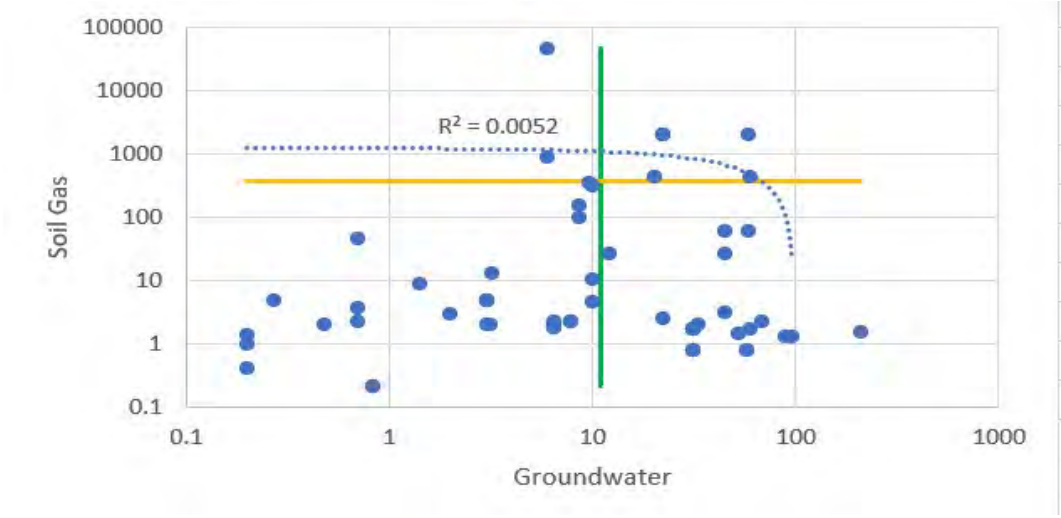
isolated high concentration data pairs. No strong associations were observed between any other combination of risk-driver COPCs in indoor air.

- **Soil Gas (Attachment Figure H.10-7).** There was a positive association between PCE and TCE (R^2=0.40, Panel A) in soil gas, regardless of location. The strength of the association is conserved for samples from the VAMC campus (R^2=0.39, Panel D), in the Sunnyside area (R^2=0.47, Panel C), and in the ESS area (R^2=0.42, Panel B). A weakly positive association between benzene and ethylbenzene was observed in soil gas (R^2=0.42, Panel E); however, no relationship was observed between chloroform and benzene in soil gas (which differs from what was observed in indoor air, [R^2=0.02, data not shown]). No strong associations were observed between any other combination of risk-driver COPCs in soil gas.

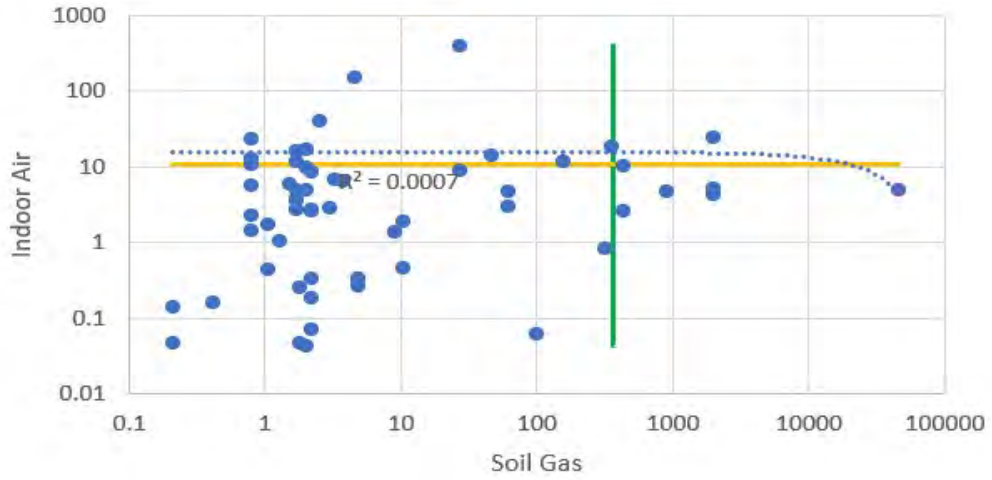
- **Groundwater (Attachment Figure H.10-8).** Relationships between PCE and TCE were strongly correlated for samples from the Sunnyside area (R^2=0.85, Panel C) and from the VAMC campus (R^2=0.72, Panel D); however, this relationship did not hold in the ESS area (R^2=0.067, Panel B), or the site-wide data set (R^2=0.0024, Panel A). Notably, for both the Sunnyside and VAMC campus data sets, these relationships may be artificially inflated by isolated high concentration detections. Regardless, the regressions suggest that the relationship between PCE and TCE in groundwater is more strongly correlated closer to the source area. As was observed for soil gas and indoor air, a strong positive association was observed between benzene and ethylbenzene in groundwater (R^2=0.96, Panel E), although the strength of this association may be artificially inflated by high concentration data pairs. No strong associations were observed between any other combination of risk-driver COPCs in groundwater.

Figure H.10-1. Relationship Between PCE Concentrations in Sampled Media

Panel A: PCE Concentrations* in Groundwater (µg/L) and Soil Gas (µg/m^3)



Panel B: PCE Concentrations* in Soil Gas (µg/m^3) and Indoor Air (µg/m^3)



Panel C: PCE Concentrations* in Groundwater (µg/L) and Indoor Air (µg/m^3)

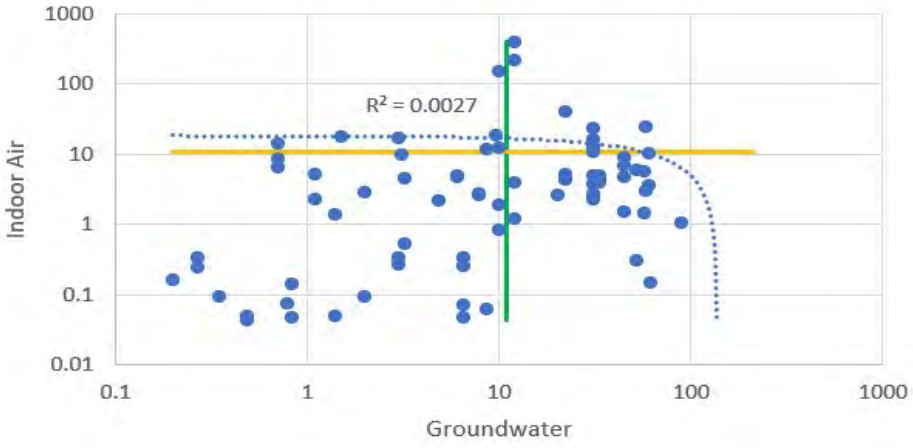
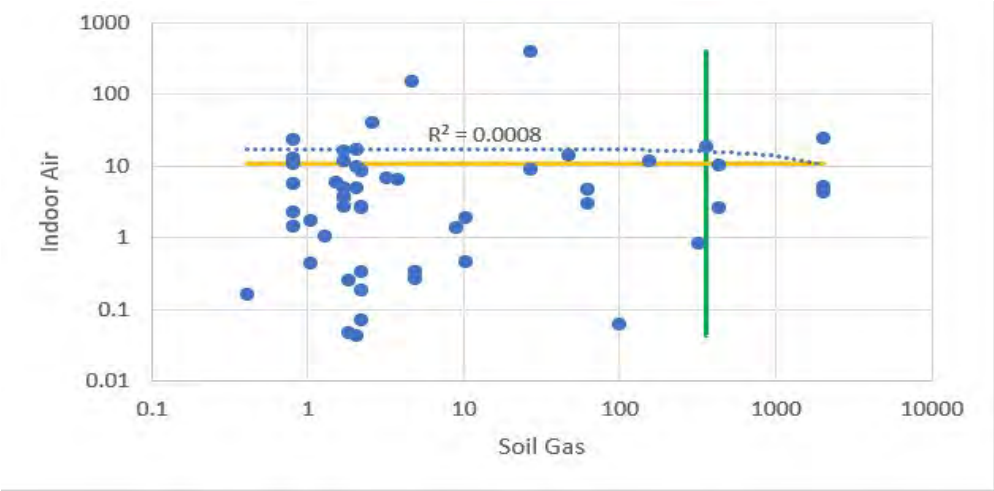


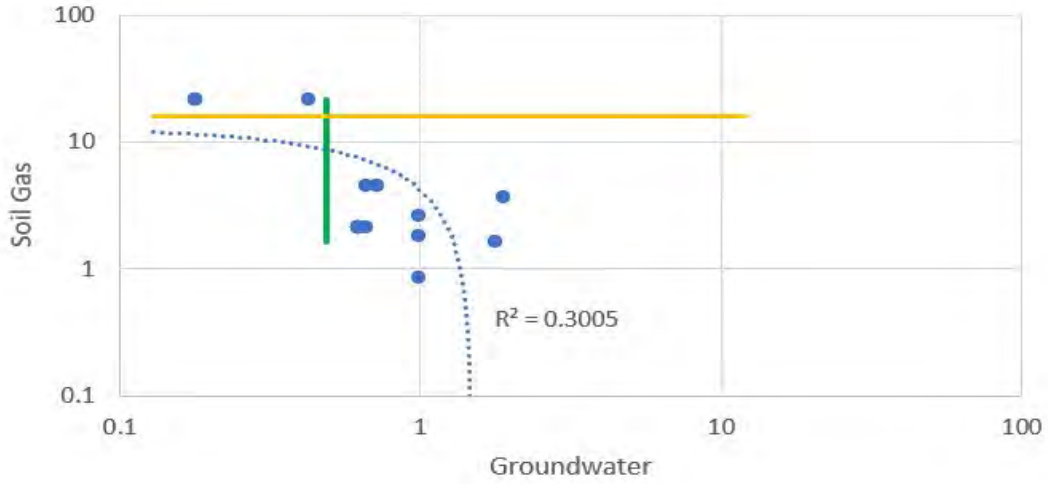
Figure H.10-1. Relationship Between PCE Concentrations in Sampled Media
Panel D: PCE Concentrations* in Soil Gas (µg/m^3) and Indoor Air (µg/m^3), East Side Springs



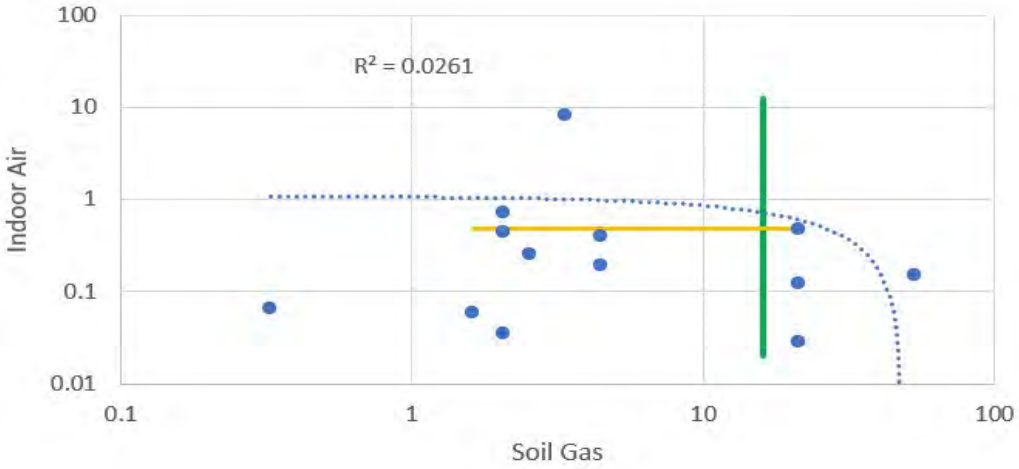
* Note log scale on axes
Points represent collocated results. Points to the right of the green vertical line indicate an exceedance of the SL for the medium or analyte on the x-axis, and points above the yellow line indicate an exceedance of the SL for the medium or analyte on the y-axis.
RSL = regional screening level
VISL = vapor instrusion screening level
SL = screening level
µg/L = micrograms per liter
µg/m^3 = micrograms per cubic meter
PCE = tetrachloroethene
TCE = trichloroethene

Figure H.10-2. Relationship Between TCE Concentrations in Sampled Media

Panel A: TCE Concentrations in Groundwater (µg/L) and Soil Gas (µg/m^3)



Panel B: TCE Concentrations* in Soil Gas (µg/m^3) and Indoor Air (µg/m^3)



Panel C: TCE Concentrations* in Groundwater (µg/L) and Indoor Air (µg/m^3)

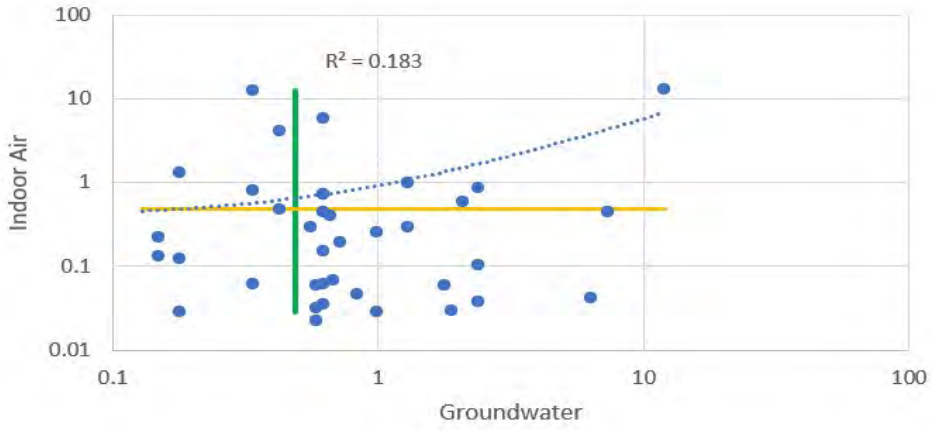
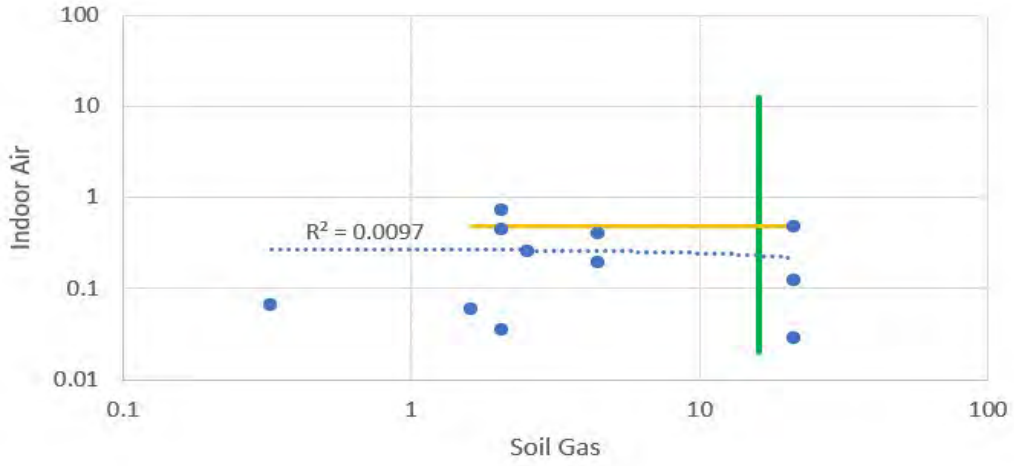


Figure H.10-2. Relationship Between TCE Concentrations in Sampled Media

Panel D: TCE Concentrations* in Soil Gas (µg/m^3) and Indoor Air (µg/m^3), East Side Springs



RSL (groundwater/indoor air) or VISL (soil gas) for medium on x-axis

RSL (groundwater/indoor air) or VISL (soil gas) for medium on y-axis

* Note log scale on axes

Points represent collocated results. Points to the right of the green vertical line indicate an exceedance of the SL for the medium or analyte on the x-axis, and points above the yellow line indicate an exceedance of the SL for the medium or analyte on the y-axis.

RSL = regional screening level

VISL = vapor instrusion screening level

SL = screening level

µg/L = micrograms per liter

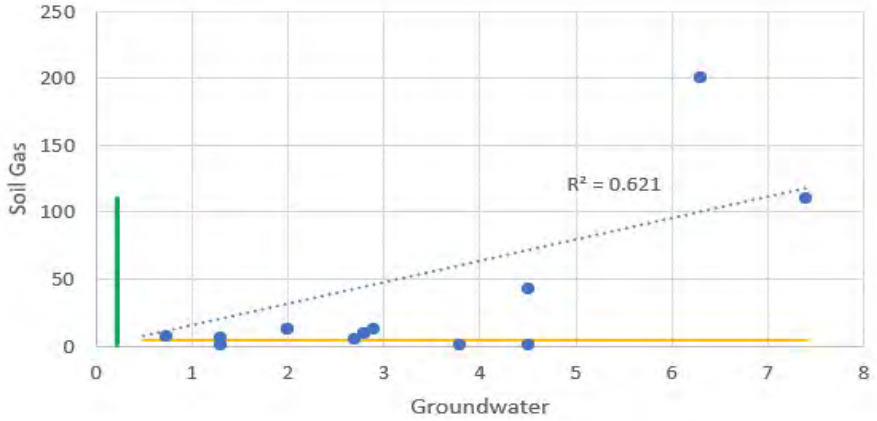
µg/m^3 = micrograms per cubic meter

PCE = tetrachloroethene

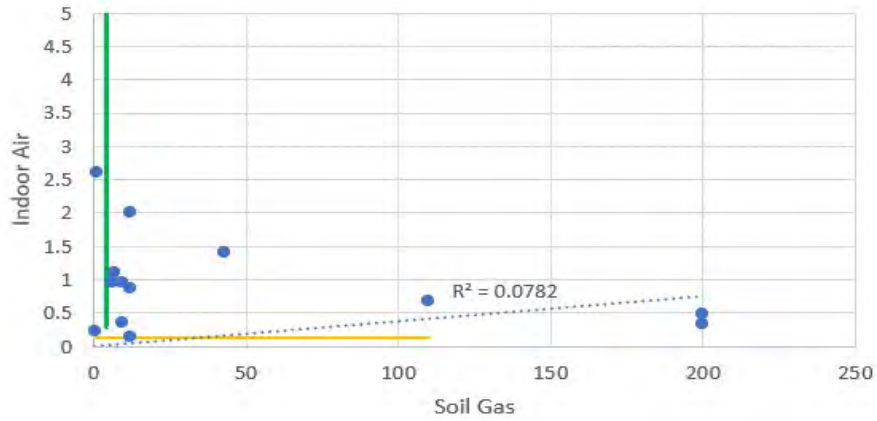
TCE = trichloroethene

Figure H.10-3. Relationship Between Chloroform Concentrations in Sampled Media

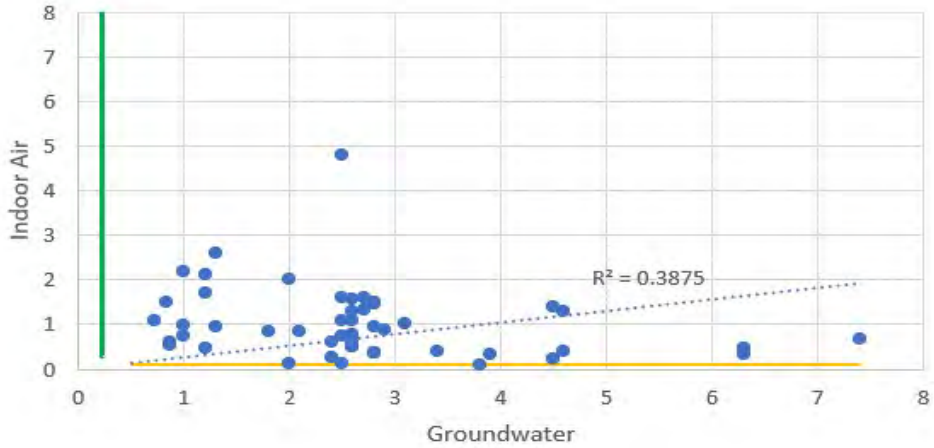
Panel A: Chloroform Concentrations in Groundwater (µg/L) and Soil Gas (µg/m^3)



Panel B: Chloroform Concentrations in Soil Gas (µg/m^3) and Indoor Air (µg/m^3)



Panel C: Chloroform Concentrations in Groundwater (µg/L) and Indoor Air (µg/m^3)



RSL (groundwater/indoor air) or VISL (soil gas) for medium on x-axis

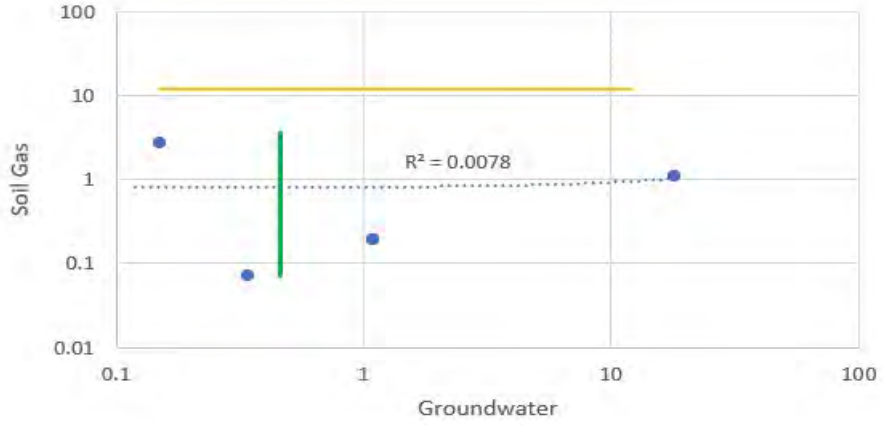
RSL (groundwater/indoor air) or VISL (soil gas) for medium on y-axis

Figure H.10-3. Relationship Between Chloroform Concentrations in Sampled Media

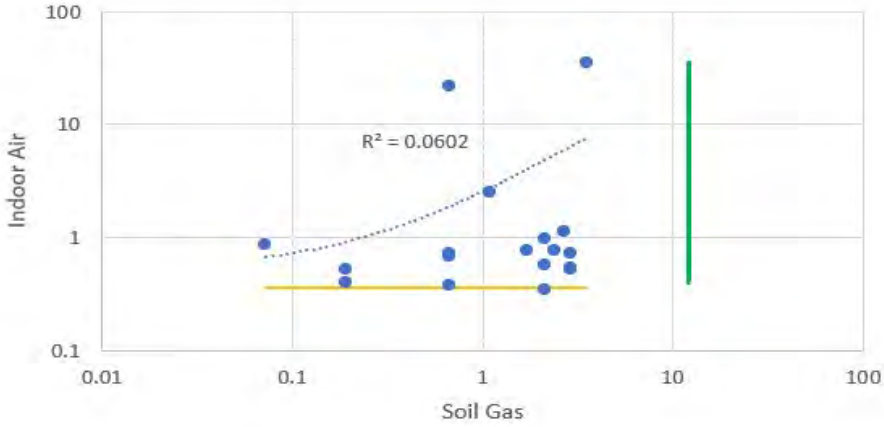
Points represent collocated results. Points to the right of the green vertical line indicate an exceedance of the SL for the medium or analyte on the x-axis, and points above the yellow line indicate an exceedance of the SL for the medium or analyte on the y-axis.
RSL = regional screening level
VISL = vapor instrusion screening level
SL = screening level
µg/L = micrograms per liter
$\mu g/m^3$ = micrograms per cubic meter

Figure H.10-4. Relationship Between Benzene Concentrations in Sampled Media

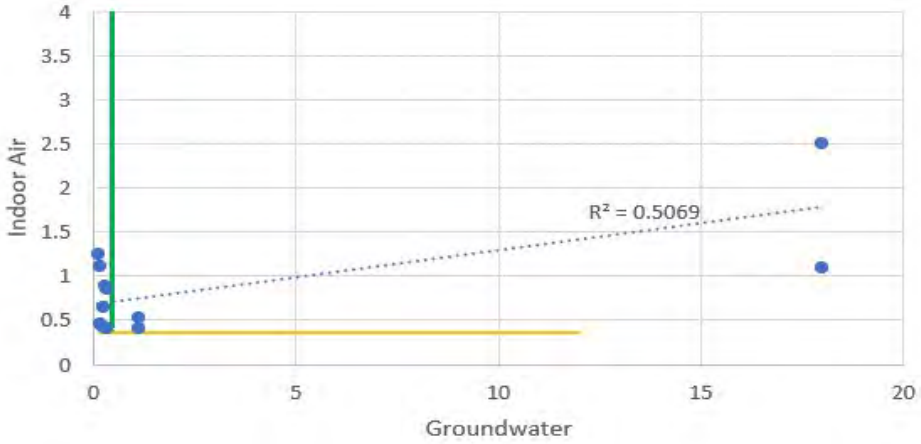
Panel A: Benzene Concentrations* in Groundwater (µg/L) and Soil Gas (µg/m^3)



Panel B: Benzene Concentrations* in Soil Gas (µg/m^3) and Indoor Air (µg/m^3)



Panel C: Benzene Concentrations in Groundwater (µg/L) and Indoor Air (µg/m^3)



RSL (groundwater/indoor air) or VISL (soil gas) for medium on x-axis

RSL (groundwater/indoor air) or VISL (soil gas) for medium on y-axis

Figure H.10-4. Relationship Between Benzene Concentrations in Sampled Media

* Note log scale on axes

Points represent collocated results. Points to the right of the green vertical line indicate an exceedance of the SL for the medium or analyte on the x-axis, and points above the yellow line indicate an exceedance of the SL for the medium or analyte on the y-axis.

RSL = regional screening level

VISL = vapor instrusion screening level

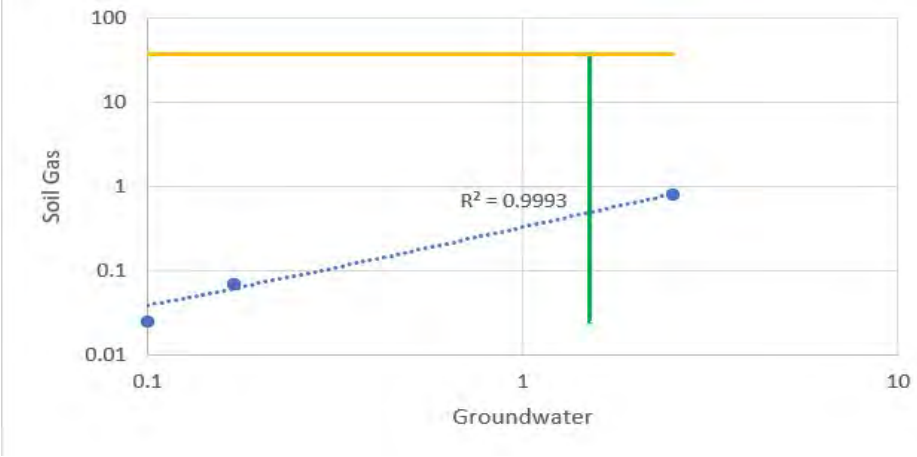
SL = screening level

µg/L = micrograms per liter

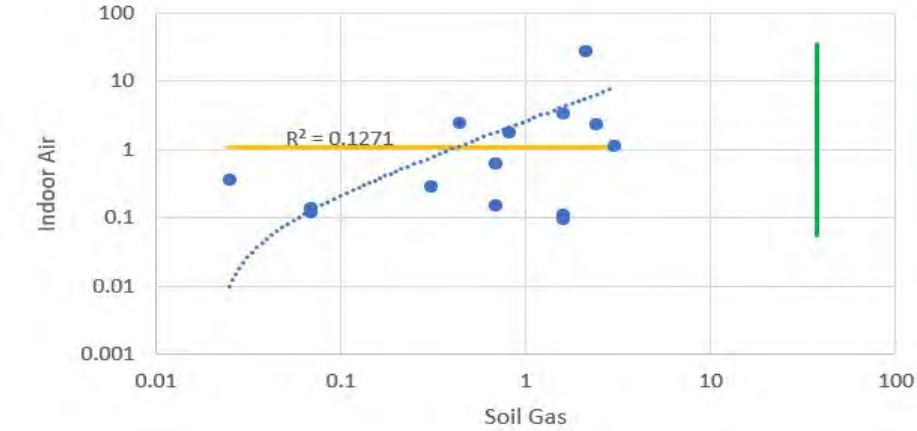
$\mu g/m^3$ = micrograms per cubic meter

Figure H.10-5. Relationship Between Ethylbenzene Concentrations in Sampled Media

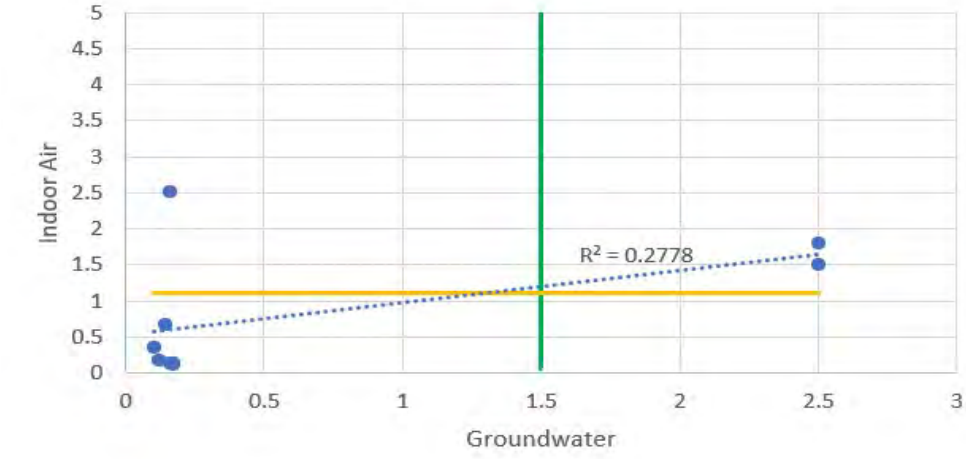
Panel A: Ethylbenzene Concentrations* in Groundwater (µg/L) and Soil Gas (µg/m^3)



Panel B: Ethylbenzene Concentrations* in Soil Gas (µg/m^3) and Indoor Air (µg/m^3)



Panel C: Ethylbenzene Concentrations in Groundwater (µg/L) and Indoor Air (µg/m^3)



RSL (groundwater/indoor air) or VISL (soil gas) for medium on x-axis

RSL (groundwater/indoor air) or VISL (soil gas) for medium on y-axis

Figure H.10-5. Relationship Between Ethylbenzene Concentrations in Sampled Media

* Note log scale on axes

Points represent collocated results. Points to the right of the green vertical line indicate an exceedance of the SL for the medium or analyte on the x-axis, and points above the yellow line indicate an exceedance of the SL for the medium or analyte on the y-axis.

RSL = regional screening level

VISL = vapor instrusion screening level

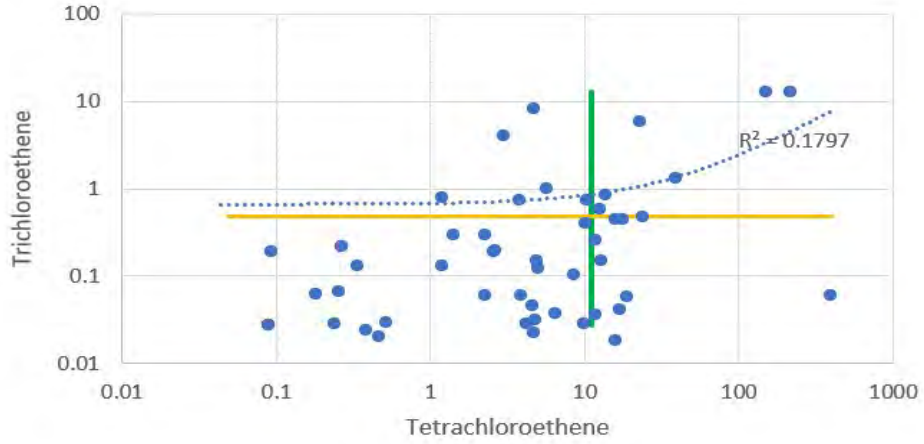
SL = screening level

µg/L = micrograms per liter

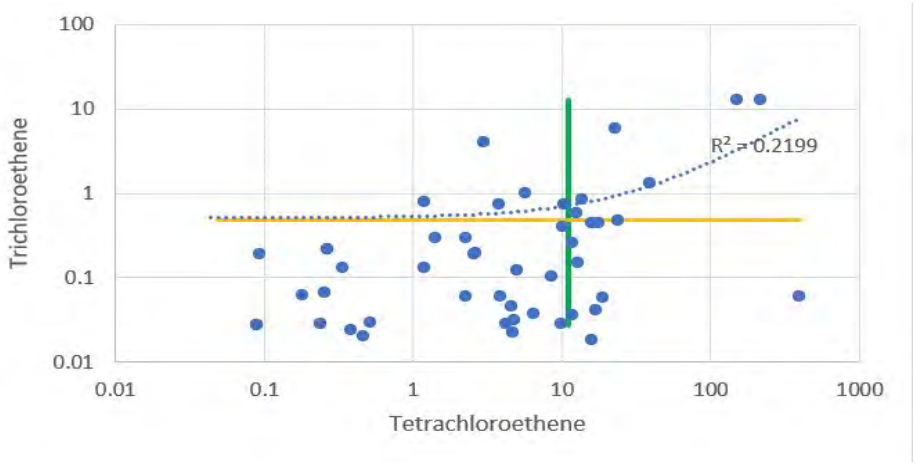
$\mu g/m^3$ = micrograms per cubic meter

Figure H.10-6. Relationship Between COPCs in Indoor Air

Panel A: PCE and TCE Indoor Air Concentrations* (µg/m^3)



Panel B: PCE and TCE Indoor Air Concentrations* (µg/m^3), East Side Springs



Panel C: Benzene and Ethylbenzene Indoor Air Concentrations* (µg/m^3)

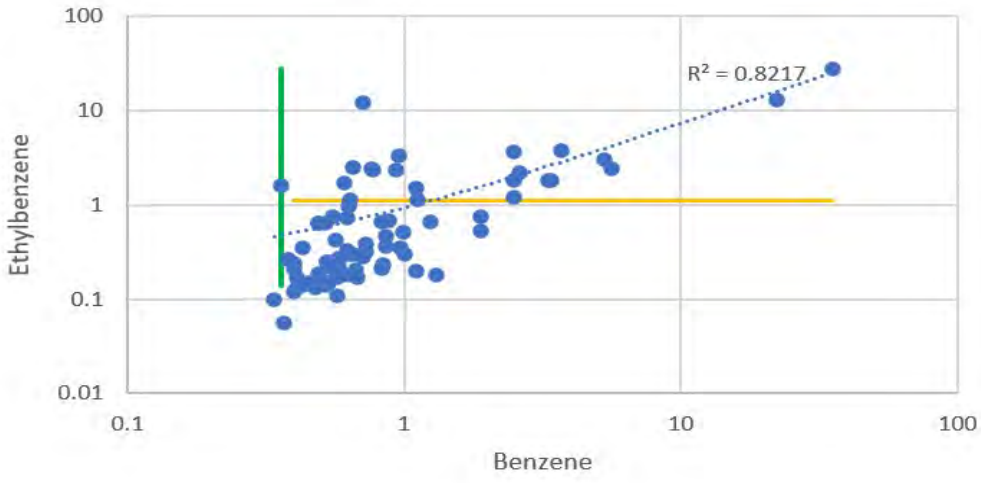
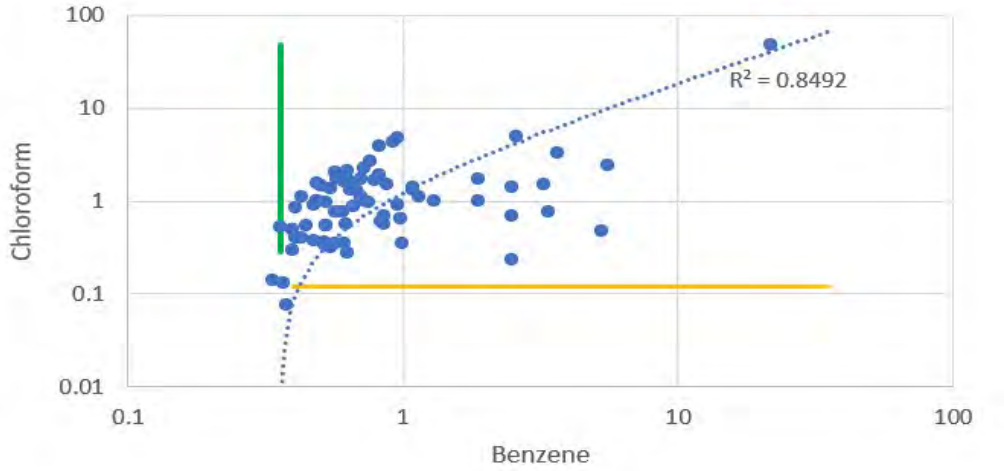


Figure H.10-6. Relationship Between COPCs in Indoor Air

Panel D: Benzene and Chloroform Indoor Air Concentrations* (µg/m^3)



RSL for analyte on x-axis

RSL for analyte on y-axis

* Note log scale on axes

Points represent collocated results. Points to the right of the green vertical line indicate an exceedance of the SL for the medium or analyte on the x-axis, and points above the yellow line indicate an exceedance of the SL for the medium or analyte on the y-axis.

RSL = regional screening level

SL = screening level

µg/L = micrograms per liter

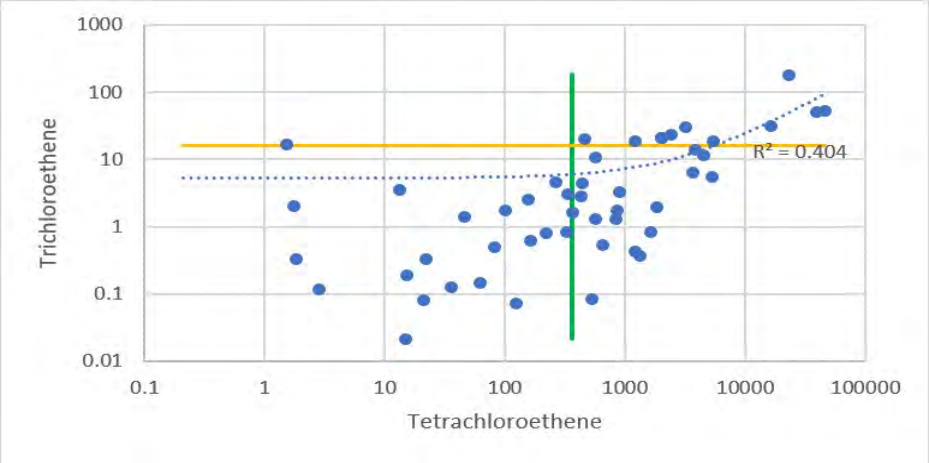
µg/m^3 = micrograms per cubic meter

PCE = tetrachloroethene

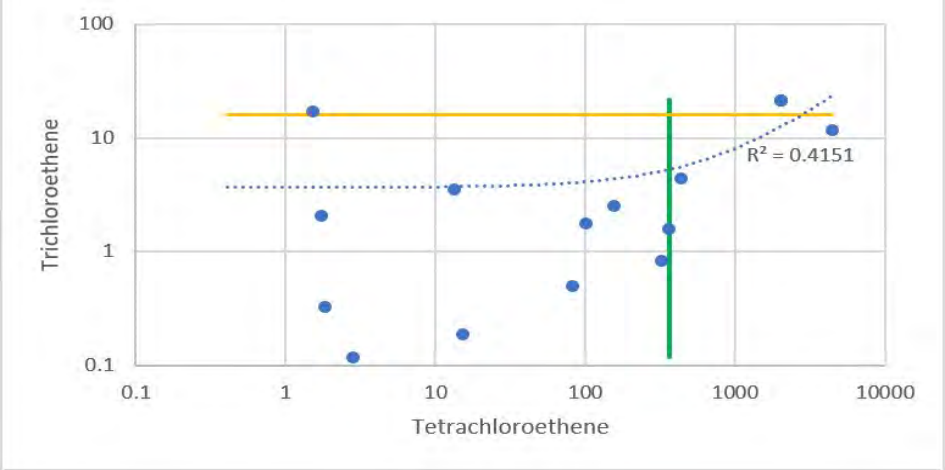
TCE = trichloroethene

Figure H.10-7. Relationship Between COPCs in Soil Gas

Panel A: PCE and TCE Soil Gas Concentrations* (µg/m^3)



Panel B: PCE and TCE Soil Gas Concentrations* (µg/m^3), East Side Springs



Panel C: PCE and TCE Soil Gas Concentrations* (µg/m^3), Sunnyside

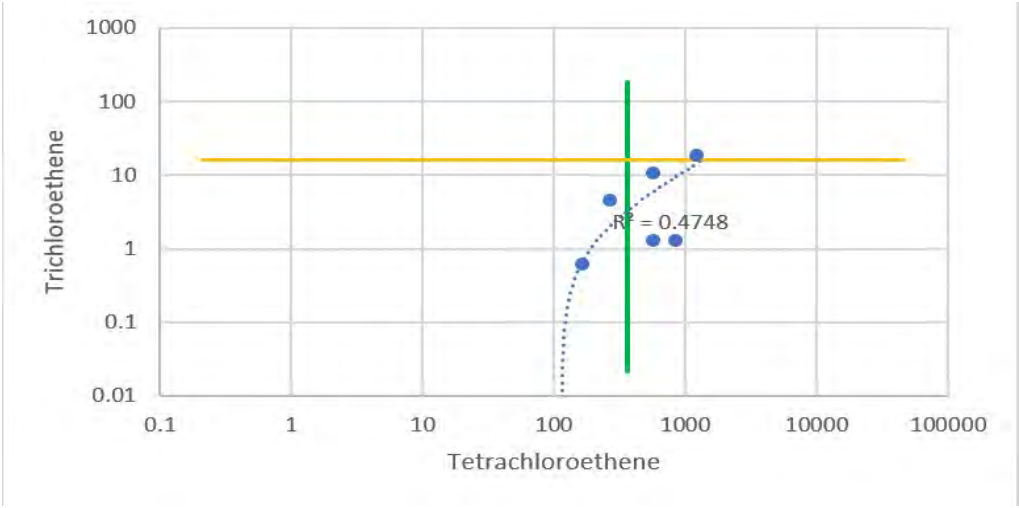
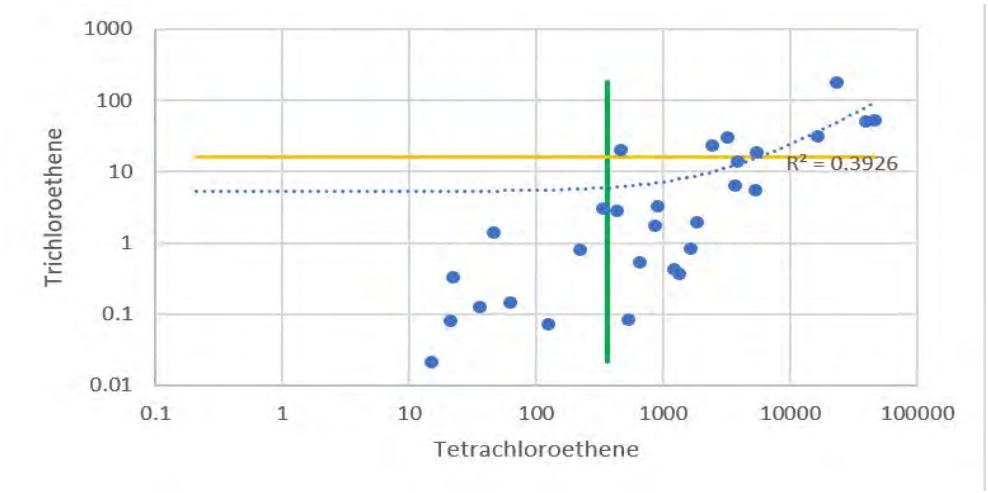
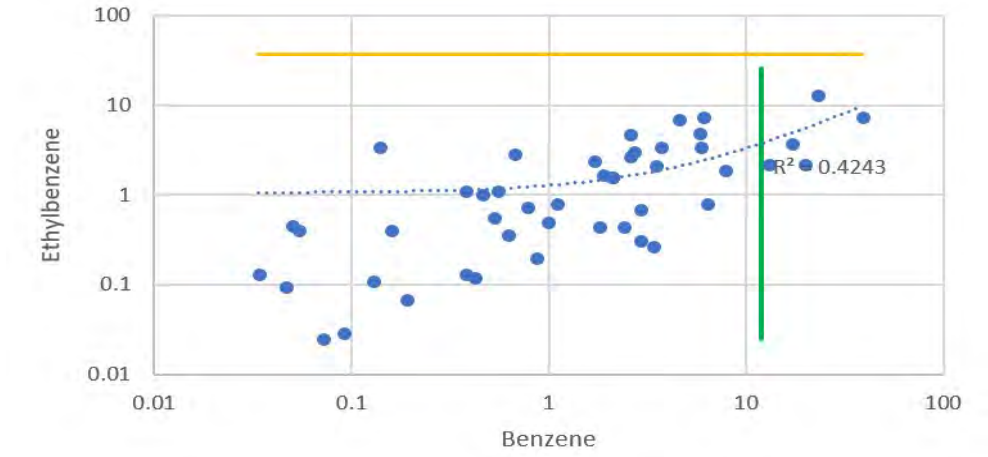


Figure H.10-7. Relationship Between COPCs in Soil Gas

Panel D: PCE and TCE Soil Gas Concentrations* (µg/m^3), VAMC Campus



Panel E: Benzene and Ethylbenzene Soil Gas Concentrations* (µg/L)



VISL for analyte on x-axis

VISL for analyte on y-axis

* Note log scale on axes

Points represent collocated results. Points to the right of the green vertical line indicate an exceedance of the SL for the medium or analyte on the x-axis, and points above the yellow line indicate an exceedance of the SL for the medium or analyte on the y-axis.

VISL = vapor instrusion screening level

SL = screening level

µg/L = micrograms per liter

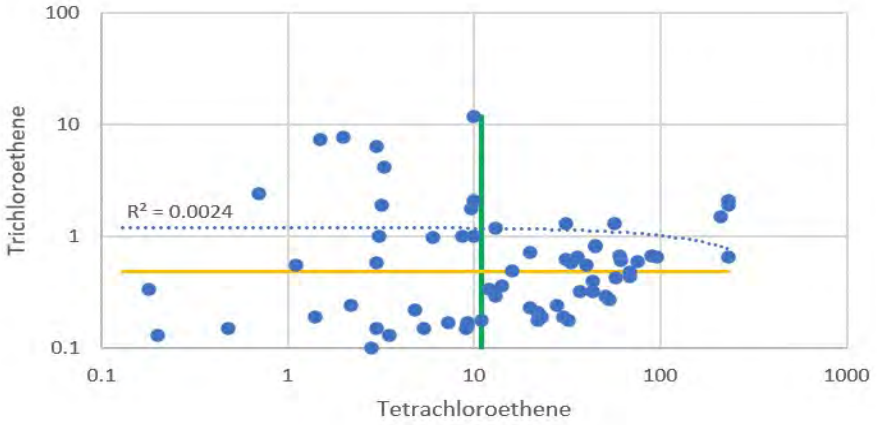
µg/m^3 = micrograms per cubic meter

PCE = tetrachloroethene

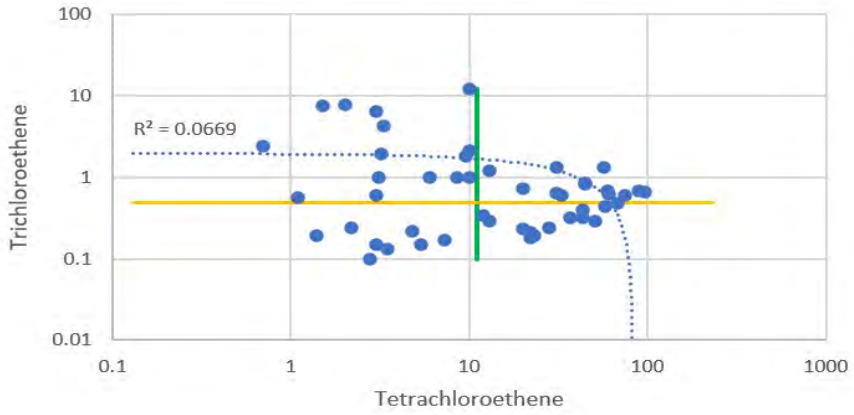
TCE = trichloroethene

Figure H.10-8. Relationship Between COPCs in Groundwater

Panel A: PCE and TCE Groundwater Concentrations* (µg/L)



Panel B: PCE and TCE Groundwater Concentrations* (µg/L), East Side Springs



Panel C: PCE and TCE Groundwater Concentrations (µg/L), Sunnyside

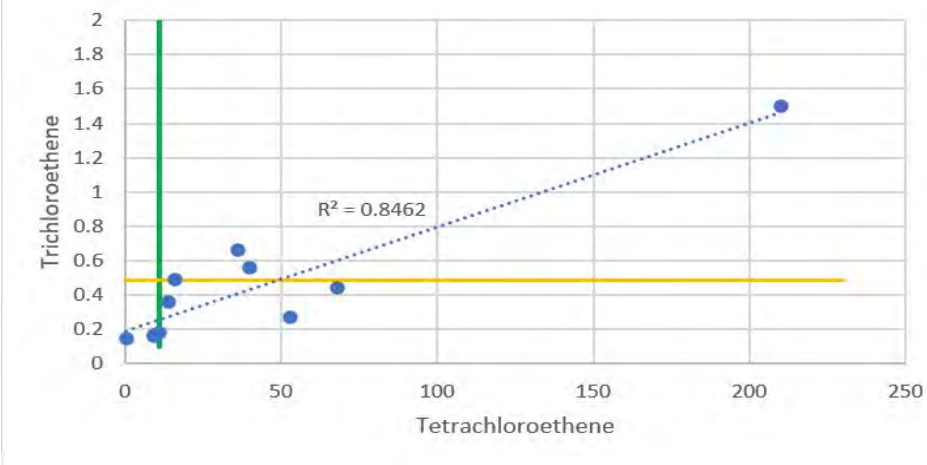
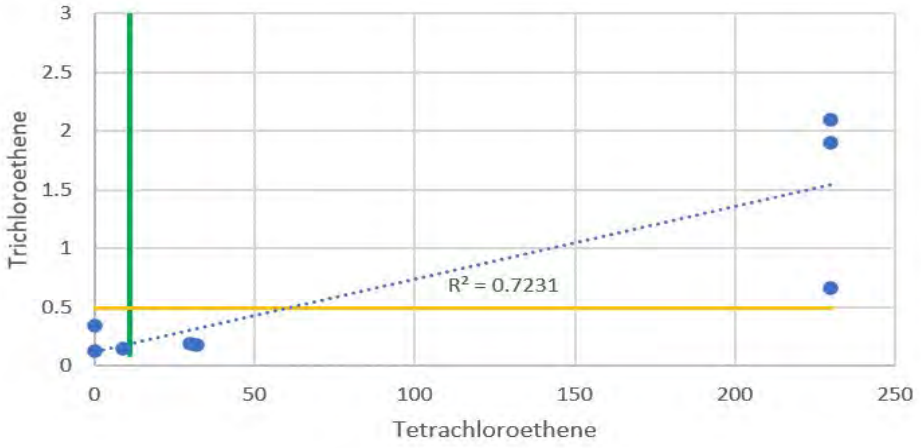
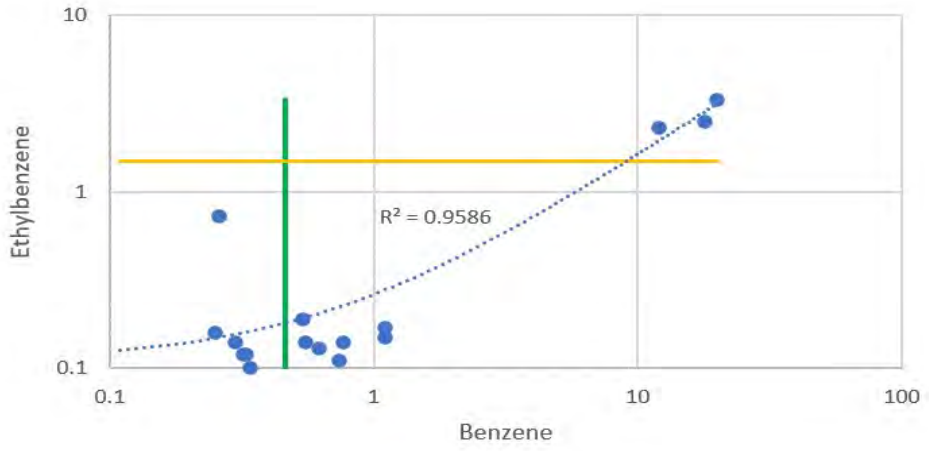


Figure H.10-8. Relationship Between COPCs in Groundwater

Panel D: PCE and TCE Groundwater Concentrations (µg/L), VAMC Campus



Panel E: Benzene and Ethylbenzene Groundwater Concentrations* (µg/L)



RSL for analyte on x-axis

RSL for analyte on y-axis

* Note log scale on axes

Points represent collocated results. Points to the right of the green vertical line indicate an exceedance of the SL for the medium or analyte on the x-axis, and points above the yellow line indicate an exceedance of the SL for the medium or analyte on the y-axis.

RSL = regional screening level

SL = screening level

µg/L = micrograms per liter

µg/m^3 = micrograms per cubic meter

PCE = tetrachloroethene

TCE = trichloroethene